FEBRUARY 2, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

RAILROAD ROUNDUP

Expansion in 1953 will climb because some was side-tracked in 1952. Financing clouds further prospects—page 82

✔ **WHAT CONGRESS WILL DO IN 1953**
On Controls, Taxes, Labor, p. 71

✔ **BASIC TESTING ECONOMICS**
Dollars Saved Sell Process, p. 104

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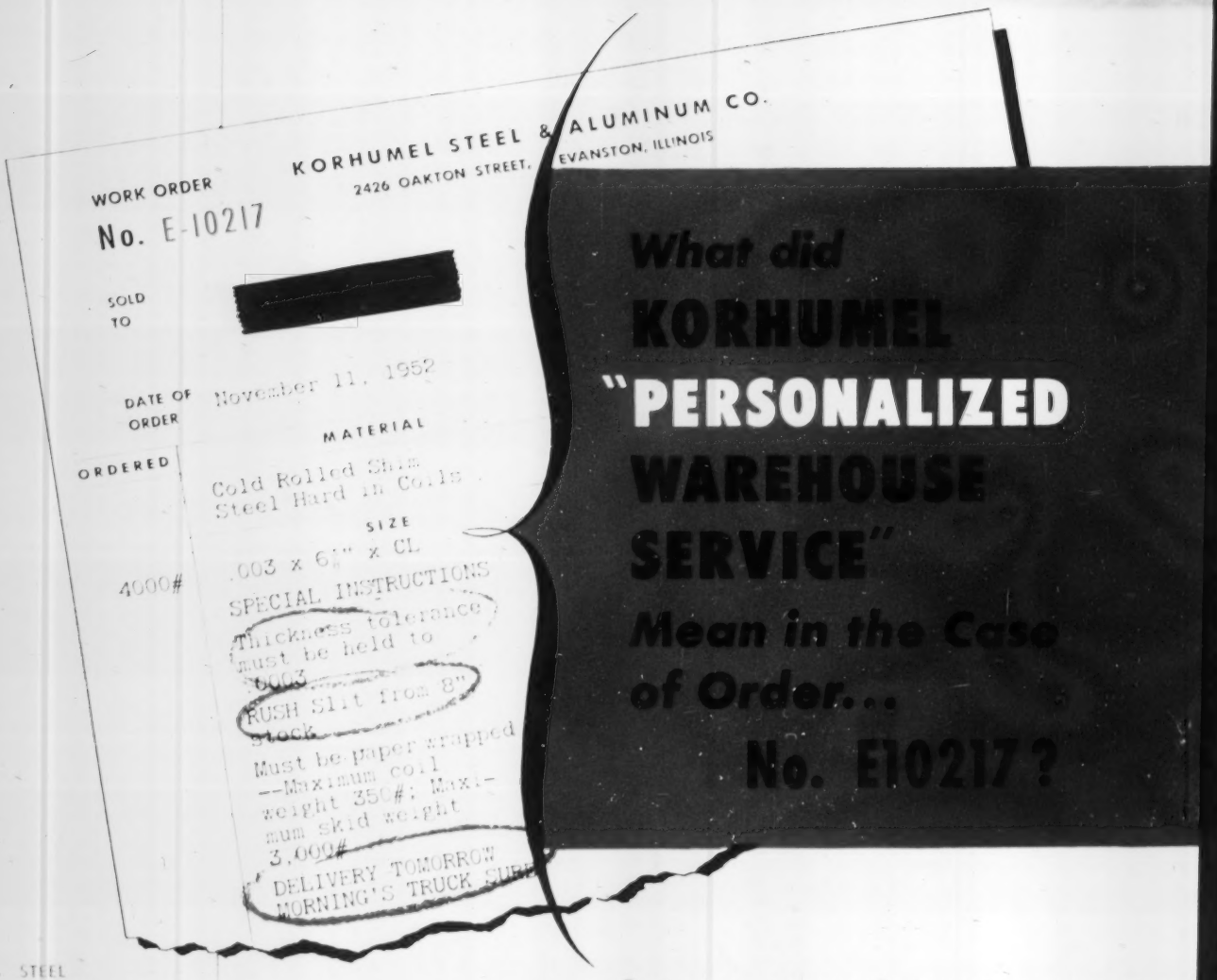

WORK ORDER
No. E-10217
KORHUMEL STEEL & ALUMINUM CO.
2426 OAKTON STREET, EVANSTON, ILLINOIS
SOLD TO
[redacted]
DATE OF ORDER November 11, 1952
ORDERED
MATERIAL
Cold Rolled Shim Steel Hard in Coils
SIZE
4000#
.003 x 6⅝" x CL
SPECIAL INSTRUCTIONS
Thickness tolerance must be held to .003
RUSH Slit from 8" stock
Must be paper wrapped --Maximum coil weight 350#; Maximum skid weight 3,000#
DELIVERY TOMORROW MORNING'S TRUCK SURE
What did KORHUMEL "PERSONALIZED WAREHOUSE SERVICE" Mean in the Case of Order... No. E10217?

STEEL
Cold and Hot Rolled
Strip and Sheet
Spring Steel, Tempered and Annealed
Feeler Gauge
Round Edge Flat Wire
Shim Steel
Electro Galvanized
Electrical Sheets
Tin Plate
Cold Finished Bars
Tubing, Seamless, Welded
Rapidflex Stainless
Hydraulic Tubing

ALUMINUM
Strip and Sheet
Coils
Straight Lengths
Bars

PHOSPHOR BRONZE
Coils and Flats

SERVICES
Slitting
Shearing
Edge Rolling
Bright Annealing
Cold Rolling
Ungerer Roller Leveling

BACK in August of last year the Korhumel sales engineer calling on [redacted] Metalworking Co., discussed just what our "Personalized Warehouse Service" could mean to them. Nothing happened until November when an unusual demand for 4000 lbs. of Shim Steel came up. This company's regular source could not supply the particular thickness and width Shim Steel required and the steel buyer put in an urgent call for the Korhumel Sales Engineer. Within an hour the order was being scheduled through our Evanston warehouse. The Shim Steel department inventory supervisor checked, and found the .003 thickness in stock, but not in the particular width specified by the company. A rush order was put through the slitting department and the next morning the order was packed and ready for shipping.

As part of the regular Korhumel "Personalized Warehouse Service" particular attention was paid to the careful packaging of this order to assure absolute protection of the product in transit. From here on the Korhumel traffic manager took over to be sure that the order was delivered on time—as specified. Sounds simple now, but the personal attention given this order meant a lot to the particular customer.

Whether your Steel and Aluminum requirements are in ton lots or by the pound . . . run of the mill steel, or a specialty item . . . Korhumel "Personalized Warehouse Service" can mean something "special" for you in service. Why not talk to your Korhumel Sales Engineer and find out how this service can help you save time and money. Check your classified telephone directory . . . call him today or write us.

STEEL & ALUMINUM

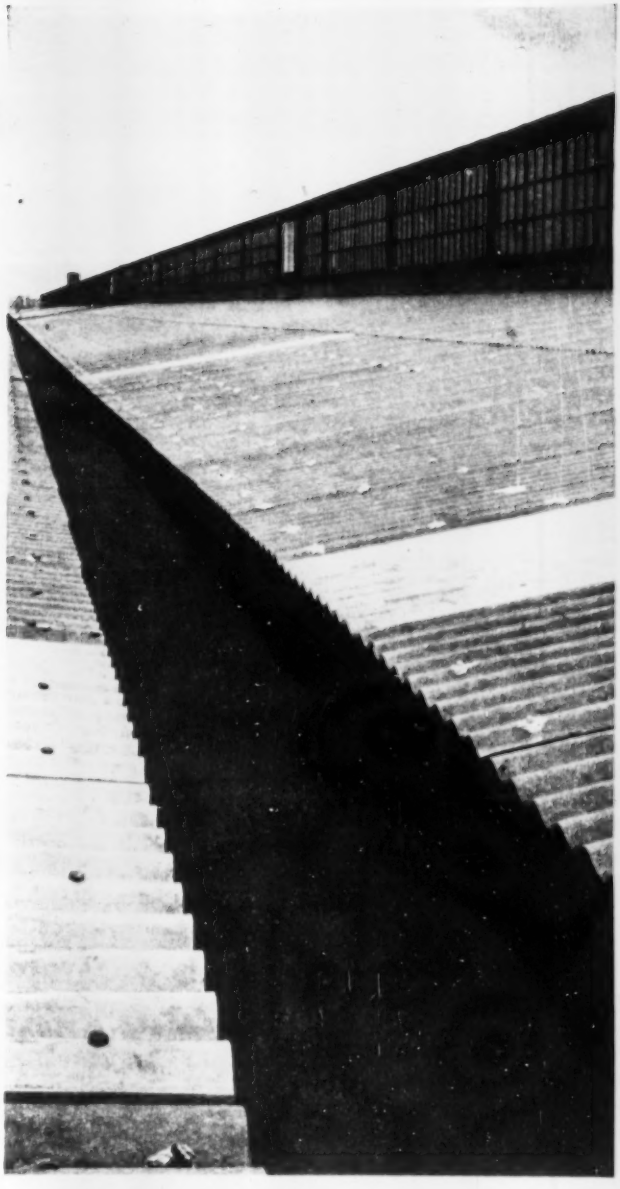
KORHUMEL
Steel & Aluminum Co.

2426 OAKTON STREET, EVANSTON, ILLINOIS

Chicago Phone: AMbassador 2-67(
Evanston Phone: DAvis 8-30(

Warehouses or Sales offices in Bridgeport • Cincinnati • Detroit • Grand Rapids • Indianapolis • Los Angeles • Milwaukee • New York • Rockford • St. Louis • South Bend

Inside Gutters 1000 ft long *made of* $\frac{3}{16}$-*in.* Mayari R

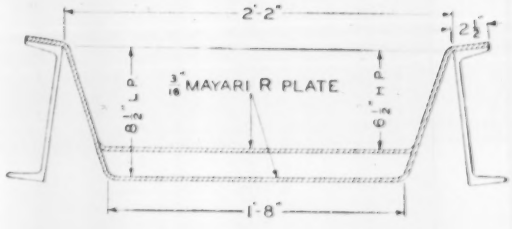


The original inside gutters on this warehouse building in Harrisburg, Pa., failed after seven years. They could not carry away the burden of cinders and debris that accumulated during extended dry spells. The periodic shoveling that was required to open the gutters damaged them, causing premature leakage.

The new gutters are made of 3/16-in. Mayari R. Each of them is located in a valley between the aisles, extending the full length of the building. Installed in sections that range from 50 ft to 70 ft in length, each gutter has electrically welded expansion joints at the high points. Varying depth of the sections provides a 2-in. drainage slope from high points to low points where the rainwater outlets are located.

Mayari R has certain advantages that led to its selection for this job. It is a low-alloy, high-strength steel with good resistance to impact and abrasion. It can withstand cinders washing along its surface, or any shoveling that may be necessary. Also, it has excellent resistance to atmospheric corrosion. Tests made in corrosive atmosphere show that Mayari R lasts 5 to 6 times as long as plain carbon steel, and 2 to 4 times as long as copper-bearing steel.

Write for Catalog 259. It covers in detail the properties of Mayari R and many recommended applications.



BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mayari R *makes it lighter... stronger... longer lasting*

HARDENING TIME CUT 62%

with TOCCO* Induction Heating

When minutes saved mean dollars earned, look to TOCCO Induction Heating

● Singer Manufacturing Co., makers of famous Singer Sewing Machines, reports the following results when they switched to TOCCO—hardening the shaft assemblies shown above. Note the operations eliminated through the use of TOCCO and the savings of 151.8 minutes per 100 parts.

OLD METHOD		TOCCO METHOD	
Operation	Min./100 Pcs.	Operation	Min./100 Pcs.
Assemble on plating racks	23.0	eliminated	
Copper plate crank end	43.0	eliminated	
Remove from plating racks	15.0	eliminated	
Harden shaft and anneal crank	120.0	TOCCO harden and clean	92.5
Strip lead	10.0	eliminated	
Strip copper and clean	33.3	eliminated	—
Old method total time	244.3 minutes	TOCCO method total time	92.5 minutes

Have you investigated TOCCO's time and cost savings possibilities for your hardening, brazing, forging or melting operations? It will pay you to write or send blueprints of your parts for analysis—no obligation of course.

SEE OUR CATALOG IN SWEET'S FILE

THE OHIO CRANKSHAFT COMPANY

TOCCO

Mail Coupon Today

NEW **FREE** BULLETIN

THE OHIO CRANKSHAFT CO.
Dept. W-6, Cleveland 1, Ohio

Please send copy of "Typical Results of TOCCO Induction Hardening and Heat Treating"

Name_____

Position_____

Company_____

Address_____

City_____ Zone___ State_____

OSBORN

Osborn has been cutting foundry molding costs for 43 years!

HERE'S HOW

- **DIRECT FACTORY SALES** through experienced foundry-trained Osborn molding field specialists who *spend all their time* on foundry applications.
- **THOROUGH ENGINEERING** of your requirements by foundry engineers backed by 43 years' experience serving the industry.
- **PRECISION MANUFACTURE** of tomorrow's Foundry Molding Machines and Core Blowers in a modern plant using modern manufacturing method assures *fast accurate mold production.*
- **CONSTANT RESEARCH** that has pioneered the industry's major improvements in more efficient, lower cost molding and core blowing.

INVESTIGATE NOW. Have Osborn's representative check your requirements to see where production can be improved and costs cut. Call or write *The Osborn Manufacturing Company, Dept. UE-1, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

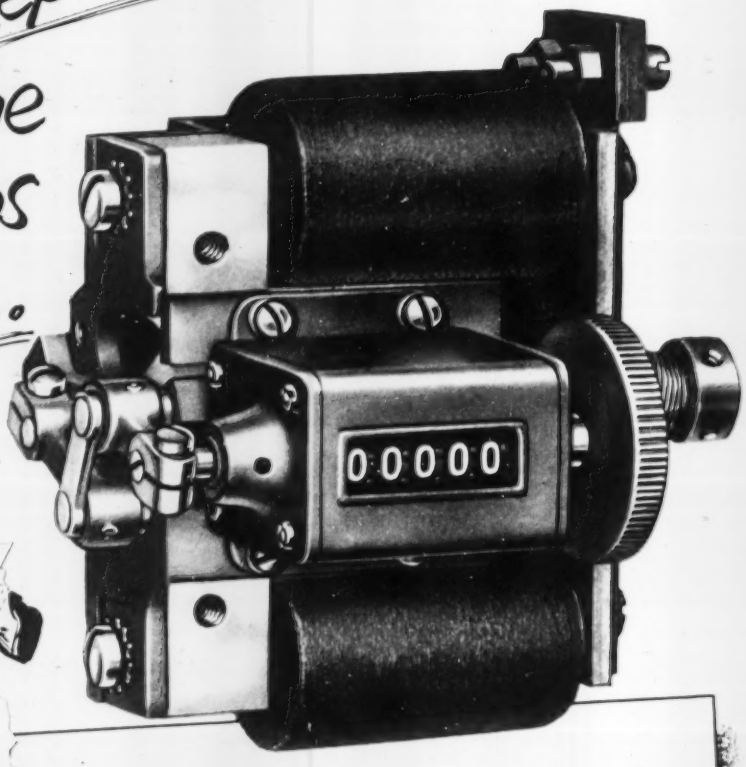
HERE'S PROOF. *Production increased* 75% at this foundry through Osborn's mechanical devices.

Serving the Foundry Industry for 43 Years

Osborn Molding Machines

MOLDING MACHINES . . . CORE BLOWERS . . . INDUSTRIAL BRUSHES

This Electrical Reporter Stays on the Tough Jobs Longer...



Added Evidence that

Everyone Can Count on VEEDER-ROOT

Compact and rugged . . . this electrically operated reset counter is specially designed for tough jobs that demand longer counter life.

Here's another instance of the *infinite applicability* of Veeder-Root *Count*rol — electrical, mechanical or manual. And here's another instance, too, of the endless resourcefulness of Veeder-Root engineering, and the ability to design a *complete counting package* that fits the job fully and exactly. Now . . . what's *your* problem?

VEEDER-ROOT INCORPORATED

"The Name That Counts"

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Montreal 2, Canada • Dundee, Scotland
Offices and Agents in Principal Cities

This Week in Metalworking

STEEL

Vol. 132 No. 5 Feb., 2, 1953

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Pre-lubricated Bearing Design
in
RELIANCE MOTORS
provides
more operating hours without re-lubrication!

Reliance PRECISION-BUILT A-c. Motors from 1/4 to 400 hp.

Reliance Bearing Design, including extra-large grease reservoir, provides longer bearing life.

RELIANCE Precision-Built MOTORS

Original, factory lubrication permits more operating hours without re-lubrication than that of any other pre-lubricated bearing. From a larger grease reservoir than provided with any standard bearing, Reliance double-shielded bearings automatically take on new grease as needed. And the Reliance design not only *keeps* bearings lubricated, but makes it *impossible to overgrease* a Reliance Motor. Get the convenient chart on which you can check these and other features which combine to give you 15 important advantages in the Reliance Pre-lubricated Bearing Design . . . write today for Bulletin B-2201.

Sales Representatives in Principal Cities

RELIANCE
ELECTRIC AND ENGINEERING CO.
1081 Ivanhoe Road • Cleveland 10, Ohio

"All Motors are NOT Alike"

5 REASONS WHY

Pannier

"MASTER MARKER"

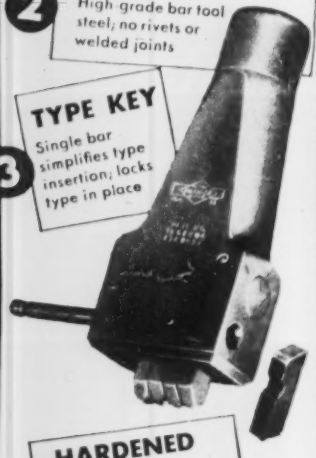
SUPREME STAMPING HOLDERS

are preferred

1 REPLACEABLE STAMPING HEAD
Increases holder life; will not mushroom or spall

2 ONE PIECE BODY
High grade bar tool steel; no rivets or welded joints

3 TYPE KEY
Single bar simplifies type insertion; locks type in place



4 HARDENED ANVIL
Prevents wear; assures constant type alignment

5 STEEL TYPE
Famous job proved Pannier "Master Marker" quality

Supreme Holder stamps multiple characters in hot or cold metal with one easy operation. Write for details of styles and sizes available.

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THE PANNIER CORPORATION
220 PANNIER BUILDING
Pittsburgh 12, Pa.

Behind the Scenes...

Hot Potato

The flood of requests that have come in for copies of the Specifications Handbook is really fabulous. Everyone was sure that this Cross-Index was a hot potato but even the bright-eyed optimists around the place are starting to gape. Cards, letters, wires, telephone calls, continue to pile in and what looked like an adequate press run is fast disappearing. If you haven't done something about getting your copy, better use one of the insert cards in this issue. The Handbooks are being delivered from the printer this week and should be in the mail to you pronto if you have already sent in your request.

How Do You Feel?

Gulp! We've just done a bit of calculating and to say the least, things don't look so good, either for you or for us. Excuse us while we adjust our *black* tie, but do you know that during the last four years of the Truman administration the life expectancy of metalworking executives actually shrunk? Back in 1949, Earl Shaner ran back through all the obits reported in STEEL for that year and found that the average age at death of metalworking men was 61.2. Well, that didn't seem too bad, especially when *Advertising Age* magazine reported that in 1951 the average age at death of advertising and publishing executives was a meager 57. A recheck of STEEL's obituaries in 1951 showed that the average age of metalworking executives who died during the year had shrunk to 63.3 years, and now the picture for 1952 is gloomier still. During the last twelve months the average age of metalworking executives at death has gone down to 62.4. You might be interested to know however, that they ranged all the way from a youthful 26 to a ripe 96, so don't despair.

Quote and Unquote

Helen Laughlin, business manager Jim Zuber's girl Friday, is having problems. She has been on an exploratory safari all over the eighth floor hunting filing space for a bushel basket full of newspaper clippings . . . all of them quoting STEEL magazine. The clips are from papers in every state across the country and represent only those sent through by the Burrelle Clipping Service during 1952. However, the 1953 crop is beginning to come through so the old ones have to go. Just to give you an idea of how many Helen is trying to find space for, we asked statistician George Auner to warm up his slip stick and do some calculating. He allows as how they would cover a 15-square foot office table and stack up a foot high. And that's a powerful lot of quoting!

Favored Magazine

It is not often in this business that you are as touched emotionally as we were last week in receiving this letter from Winter Park, Florida.

Dear Sirs:

My late husband was a subscriber to STEEL *long before he and I were married. He was with the Republic Iron and Steel Company for many years as a blast furnace superintendent. I felt it was my duty to become interested in his business, so for more than thirty-two years I have looked through your magazine, missing very few issues in that time. Perhaps even you do not realize how the magazine has changed, improved in readability and attractiveness, with the passing years. My husband considered it invaluable, even long after he retired from active work in the steel industry. I shall continue to read it until the expiration of his subscription. He died August* 8, 1952.

Yours sincerely,

Mrs. W. D. McCreery

A life subscription to STEEL has just been entered for Mrs. McCreery.

Puzzle Corner

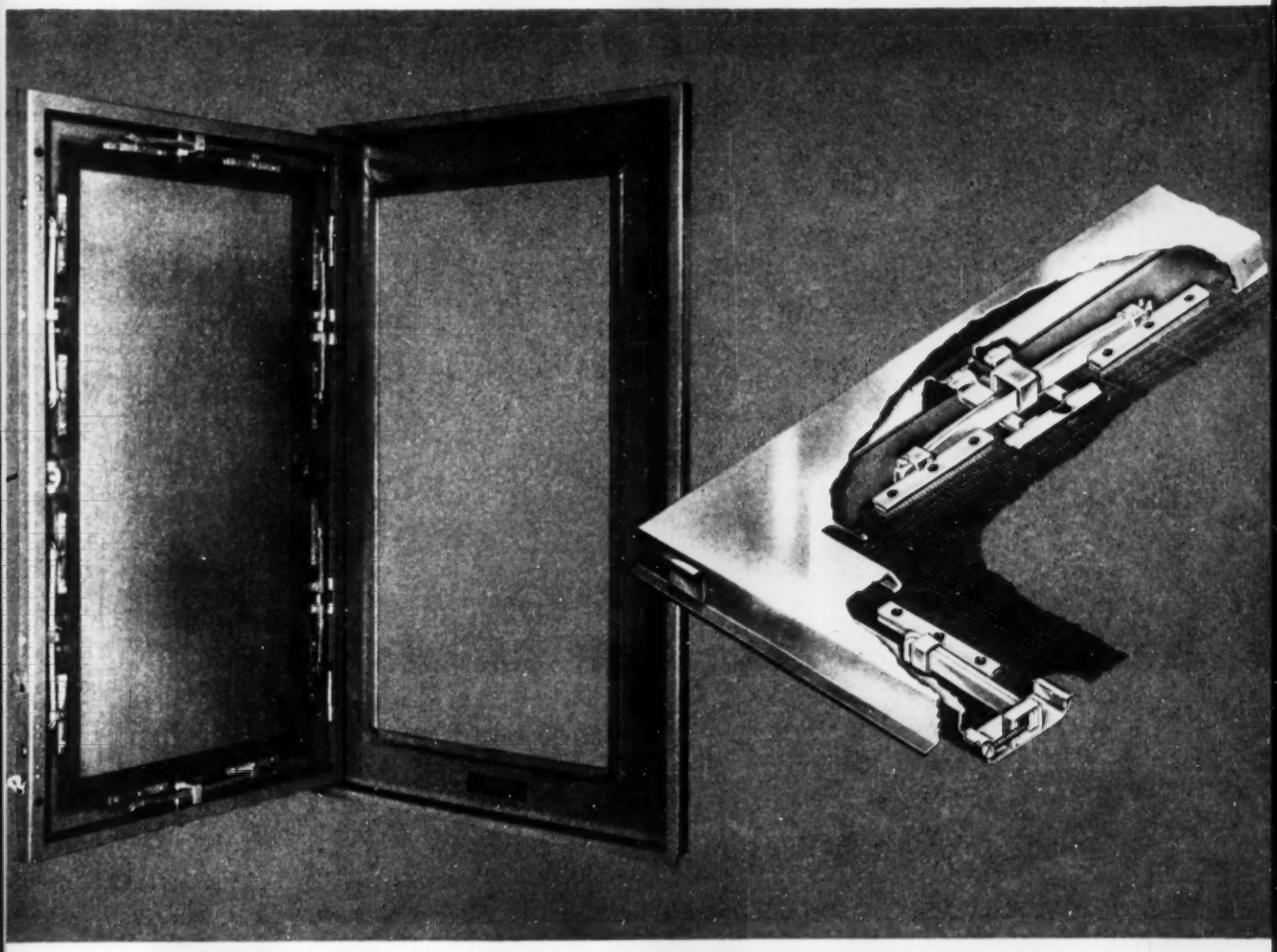
There wasn't enough room last week to squeeze in a puzzle nor even to report that 2519 bottle caps was the right answer for January 19. Take a crack at this one:

If an Army 40 miles long advances 40 miles while Sam, a dispatch rider, travels from the rear to the front, delivers a message to Al, and returns to the rear, how far does Sam travel?

Shrdlu

(Metalworking Outlook—Page 63)

SHARON STEEL



Here's Window Construction that's Differen

Windows are primarily built to divert everything but the sun, air and view. There are concerns, however, who build windows primarily to prohibit escape. They are detention windows, and find their market in jails and prison hospitals. They require special construction to give them the strength to resist the attacks of both men and weather, and a special design that discourages tampering.

Special hard, rust-resistant steels, such as Sharon Galvanite*, are used in the frames. Tough stainless steel screening is firmly gripped by strong spring steel fingers. Here Sharon high carbon spring steels are used to accomplish that never-tiring hold that eliminates the possibility of screen removal. Moldings and exterior trim, subject to the ravages of weather, utilize the best weather-beater of them all—Sharon Stainless Steel.

SHARONSTEEL

If you're making windows, or any product that requires quality steels, or if your needs are for standard hot or cold rolled steels, and you want the finest, specify SHARON all the way.

T.M.

DISTRICT SALES OFFICES

Chicago	Cincinnati
Cleveland	Dayton
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Milwaukee	New York
Philadelphia	Rochester
Los Angeles	San Francisco
Montreal, Que.	Toronto, Ont.

SHARON STEEL CORPORATION *Sharon, Pennsylvania*

For information on Titanium contact Mallory-Sharon Titanium Corp., Niles, Ohio

FROM MINIATURES

This three ton tank was produced in 1918. It accommodated two men, a driver and a gunner sitting side by side. Armament consisted of one 0.30 caliber machine gun with arc of traverse 21 degrees, vertical arc, 38 degrees. Power to drive this unit was provided by two engines; 45 H.P. total. A planetary transmission having two forward speeds and one reverse was used. Maximum speed was 8 mph, and the fuel range was 34 miles. Dimensions were: length 13 ft., 8 in.; width 5 ft., 6 in.; height 5 ft., 3 in.

EVERY FACILITY
FOR PRODUCING

ARMOR PLATE for Ordnance

TO MONSTERS

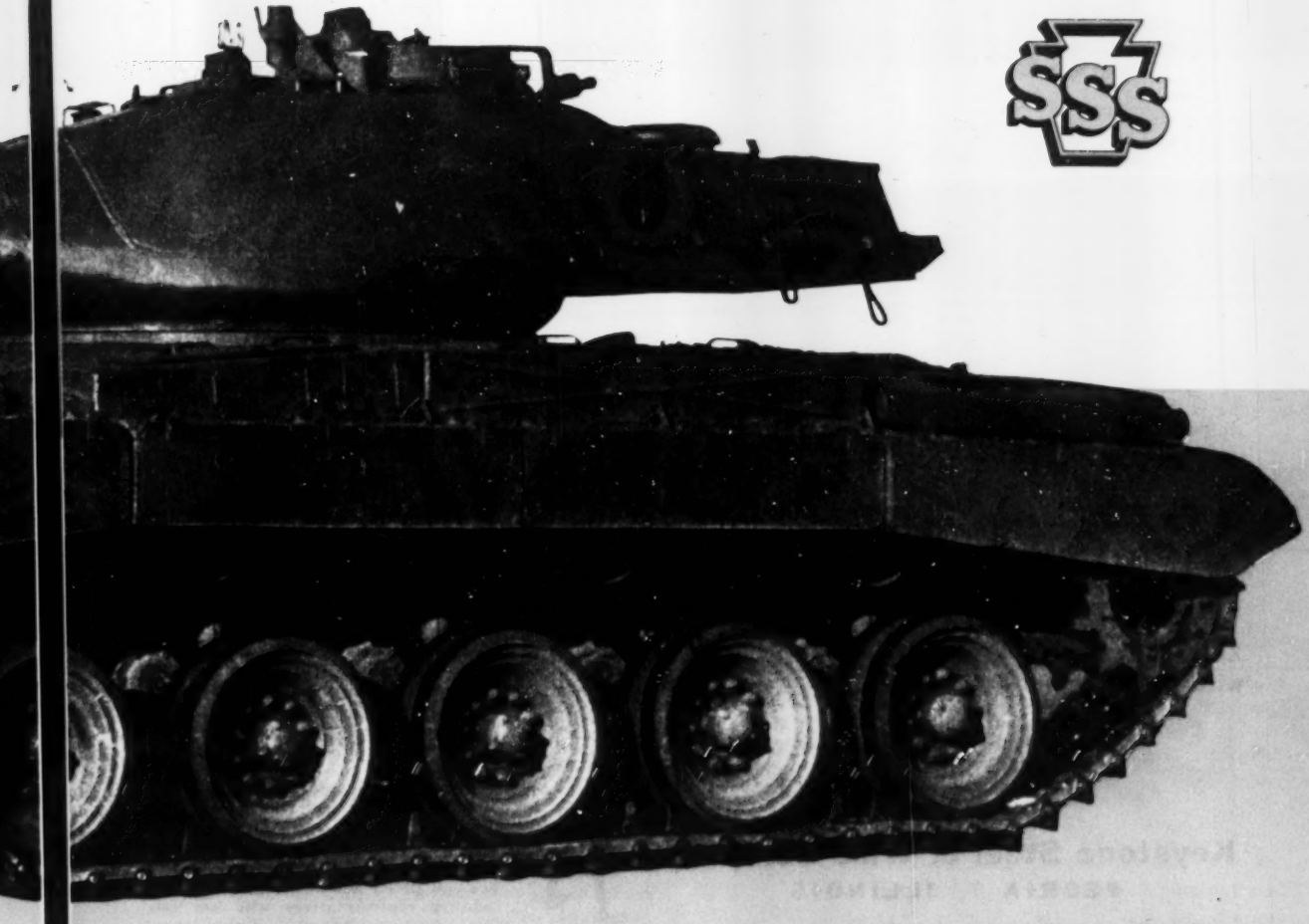
Standard Steel Spring Company Has Always Been An Integral Part of Tank Production

Standard Steel Spring Company has served every National emergency since the inception of the tank in the capacity of key producer and coordinator for Ordnance Department armor plate programs. Today, more than ever before, our talents are devoted to the cause of speedy, efficient re-armament. To this end we have brought together a large, integrated group of subcontracting plants, staffed and equipped to turn out tank armor plate in huge volume. We work with our customers to design the parts for the most economical production, to efficiently tool for them, to expedite delivery and to carefully inspect so as to maintain exacting quality standards.

Our facilities are complete, our schedules flexible. Whatever your needs for flat or formed armor plate—fully machined and even sub-assembled if desired, we at Standard Steel Spring Company are ready to serve you.

Standard Steel Spring Company

ARMOR PLATE DIVISION · PENOBSCOT BLDG. · DETROIT, MICH.



Ready to Assemble in Gauges from ¼" to 4" inclusive

The above macrograph offers visual proof of the uniform grain flow characteristics in a carriage bolt made from Keystone "Special Processed" Cold Heading Wire. The continuous, strength-giving flow lines are a sure sign of efficient cold heading which results in longer die life, increased production and a better finished product.

The following analysis of "special processed" wire is recommended for difficult cold heading:

C1006 - C1012 for Clutch Heads
C1006 - C1022 for Phillips Heads
C1108 - C1109 for Phillips Head Wood Screws
C1035 - C1038 for Heat Treated Screws and Bolts

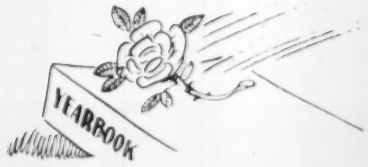
Keystone is prepared to help solve any of your industrial wire problems. Your inquiry is welcomed.

INDUSTRIAL WIRE SPECIALISTS

Keystone Steel & Wire Company
PEORIA 7, ILLINOIS

LETTERS
TO THE EDITORS

Yearbook Scores a Point



Permit me to add my compliments to hundreds of others which you undoubtedly have received concerning the Jan. 5, 1953 Yearbook issue of STEEL. It is exceptionally well organized and chock full of the type of vital information which a supplier to the metalworking industries needs to make place for this significant position of our industrial economy. Your editorial, as usual, was inspiring, challenging and right to the point.

F. M. Cardine
manager, Market Extension
Brown Instruments Division
Minneapolis-Honeywell Regulator Co.
Philadelphia

Scrap Story Rates as Finest

One of our men, who should know, says your article "More Scrap for More Steel" (Jan. 12, Insert) is the finest article on the subject he has seen in a long time and he would like six copies. If it's that good, we will probably have a management request also, so could you make it eight copies please?

F. M. Weitlauf
Timken Roller Bearing Co.
Canton, O.

• *They're on the way. Eight of them—ED.*

A New Spiritual Force

I have always found your editorials stimulating reading, and particularly the one in the Jan. 5 issue.

There is a new spiritual force at work throughout the nation which, it is hoped, will be effective in correcting some of the deplorable situations which have caused such consternation in the past.

The selection of Mr. Dirken as secretary of labor was no doubt made after careful deliberation. We believe it is the aim of the administration to make the labor movement come of age, as a responsible body with its first obligation to the citizens as a whole, conducted on the same level as any other private enterprise.

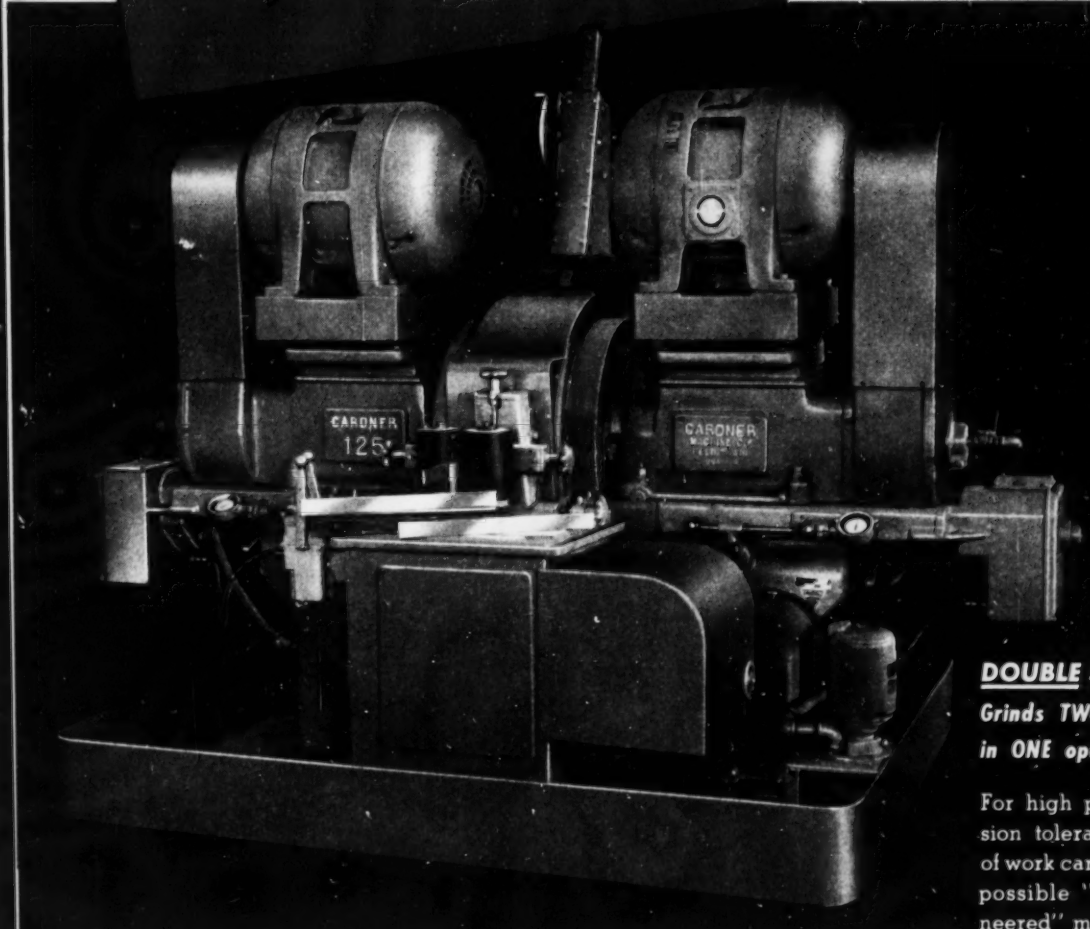
There is great hope everywhere for the establishment of a fair and workable labor policy, backed by laws that will assist in creating a much needed improvement in relations among the people, labor and management.

However, many smaller manufacturers, and some large ones, are worried that this new policy will be designed by "big" industry representatives who are cabinet members and whose organizations

Continued on following page

GARDNER precision disc Grinders

Three Machines That Will Reduce Your Flat Surface Grinding Costs

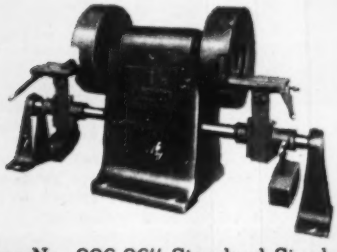


***DOUBLE* SPINDLE GRINDER**

Grinds TWO Parallel Surfaces in ONE operation

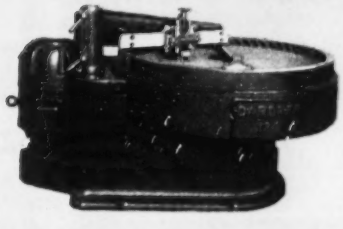
For high production to precision tolerances. Wide choice of work carrying fixtures makes possible "individually engineered" machines at low cost.

SINGLE SPINDLE GRINDER



Gardner No. 226-26" Standard Single Spindle Grinder with hand-operated lever tables on each end. A general purpose machine with wide industry applications.

HORIZONTAL DISC GRINDER



Gardner No. 124-53" Horizontal Disc Grinder used for grinding a flat surface on castings and weldments in a wide variety of sizes and shapes.

No. 119M

GARDNER MACHINE COMPANY

420 East Gardner Street · Beloit, Wisconsin, U. S. A.

Whatever the Hole Condition...

Whether a hole is deep or shallow, narrow or wide, whether it's difficult to get at, recessed or irregular, there's a Federal Indicating Gage to check it conveniently, and to precisely the dimension limits you require. With a Federal Gage you can inspect a hole as small as .122" and as large as — well, you tell us how big!

Each of the gages below is built to fit certain gaging limitations better than any other gage. You can find how useful they can be to you by sending in the coupon below.

And remember, the Federal Dimensionair Air Gage *also* checks holes.

FEDERAL Largest manufacturer devoted exclusively to designing and manufacturing *all types* of DIMENSIONAL INDICATING GAGES

Fill in and mail this coupon!

FEDERAL PRODUCTS CORPORATION
1212 Eddy Street, Providence 1, Rhode Island

Please send me information on a hole gage for the following job:

☐ Sketch ☐ Blueprint is enclosed showing dimension we wish to gage.

NAME

COMPANY

STREET

CITY STATE

LETTERS

Concluded from preceding page

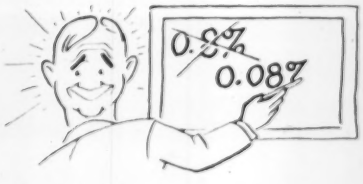
long ago forfeited to the unions the privilege of dealing directly with their employees. They wonder whether the new policy will take into consideration the need for legislation which will protect employees who have fared well under the system of bargaining individually and directly with their employers, and who do not wish to become union members. Is the new administration aware of the pressure which has been and is being brought to bear on many enterprises, and the attacks made on free businessmen by union organizers?

Many have found the struggle too wearing and have succumbed, abandoning the best interests of their employees and their company in the process.

Smaller manufacturers earnestly hope that the government will remember this in its labor program, and take measures to insure to every employee and employer the right to decide whether or not he wishes to deal with a union. It is time for union practices to assume a more mature and democratic aspect.

Rene D. Wasserman
president
Eutectic Welding Alloys Corp.
Flushing, N. Y.

Big Difference in Carbon



On p. 225 of your Jan. 5 issue, you briefly comment upon our Mr. G. V. Luerssen's statement on a new stainless steel with reduced work-hardening characteristics. I would like to call attention to an error in setting this copy where you show carbon content as 0.8 per cent and where Mr. Luerssen's letter shows it accurately as 0.08 per cent.

That difference in carbon is considerable.

A. E. Keller
advertising manager
Carpenter Steel Co.
Reading, Pa.

• *Thank you for pointing out this typographical error.—ED.*

Pattern for Steel Storage

In your Dec. 29 issue of STEEL our attention was taken by an article on "Warehousemen Prepare for Buyers' Market" (p. 43). In heading this article you used a picture of steel stored in a warehouse in a manner similar to what we are attempting to do in a new crane shed.

We would appreciate it very much if you could advise us as to the company name of this warehouse so that we may get in touch with them.

A. P. Dunham
plant manager
Lewis-Shepard Co.
Watertown, Mass.

• *The photograph was of Jones & Laughlin Steel Corp.'s Pittsburgh warehouse.—ED.*

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BARS?

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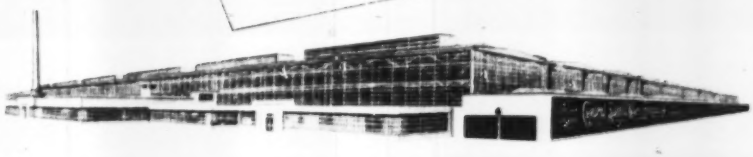

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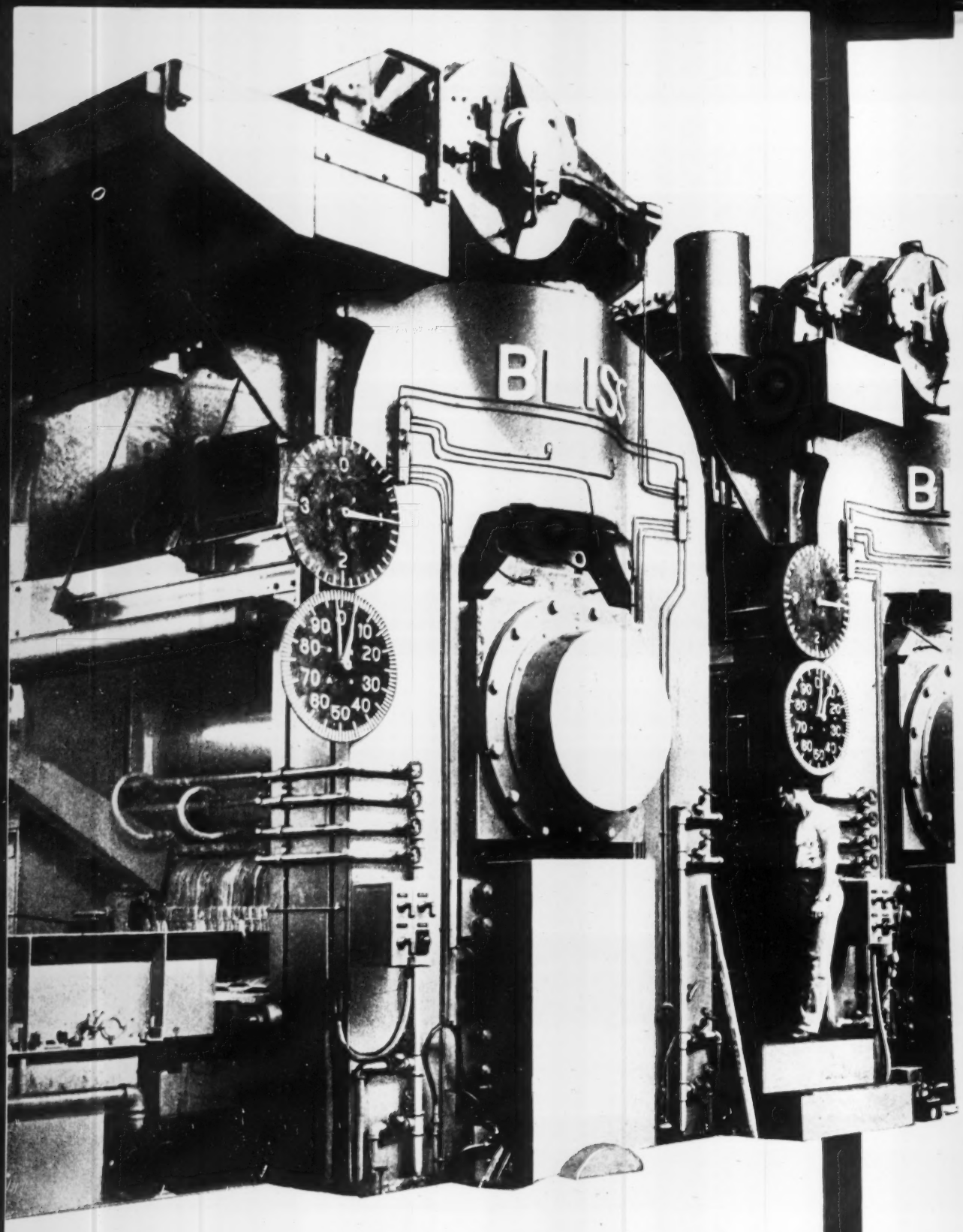
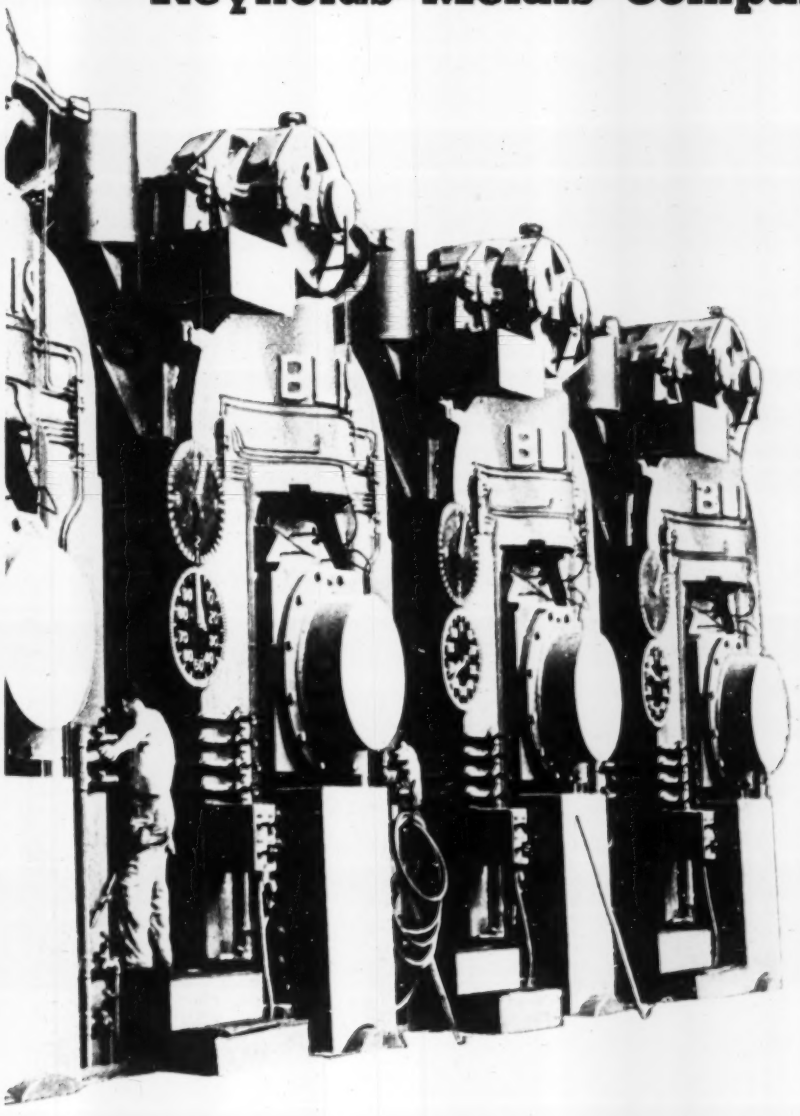


Remember: for Presses, ROLLING MILLS
and Special Machinery... ***It's BLISS!***

BLISS Mill rolls 2,000,000 lbs. of aluminum in eight hours for Reynolds Metals Company



Here's another Bliss rolling mill installation whose *performance* speaks for itself.

For several years a Bliss five-stand, four-high 80" tandem mill has been hot-rolling huge quantities of aluminum sheet at the McCook (Ill.) plant of Reynolds Metals Company.

This leading aluminum producer has rolled as many as 570 ingots on the Bliss mill in an eight-hour shift. Maximum production, poundage-wise, has exceeded 2,000,000 lbs. in one shift.

The mill is now processing all the material produced on Reynolds' 120" and 96" ingot and slab breakdown mills. Average delivery gage is .120" with a maximum speed of 850 fpm, and minimum width is approximately 24". Ingot starting sizes vary from 10" x 30" to 16" x 48".

Like Reynolds, other major processors of aluminum, steel and brass are using Bliss rolling mills to step up plant efficiency and boost vital metal production. You, too, will find it's wise to take your metal-rolling problems to Bliss. Get a complete picture of the Bliss line of mills and accessories. Write for our 52-page brochure, Bulletin No. 40

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New catalog shows how

"DIE-LESS DUPLICATING" SAVES TOOLING COSTS, SPEEDS PRODUCTION

New 32-page catalog, chock-full of operating photographs, shows the wide variety of parts that can be formed and fabricated—often without the use of dies—by Di-Acro Metalworking Machines. Gives complete machine specifications and material capacities on 36 hand and power operated models in handy reference tables. Explains Di-Acro Engineering Service—it has helped solve many problems. Write for your copy now.

Di-Acro is pronounced Die-ack-ro. It is the registered brand name for both hand and power operated Di-Acro Benders, Brakes, Notchers, Punch Presses, Rod Forters, Rollers, and Shears.

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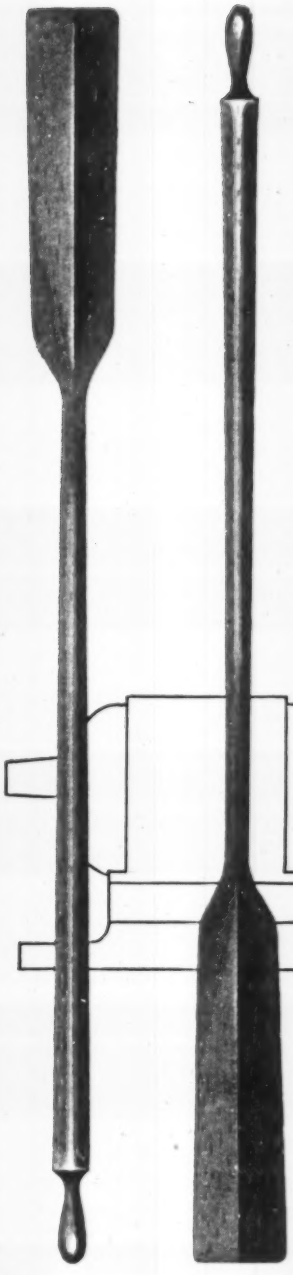

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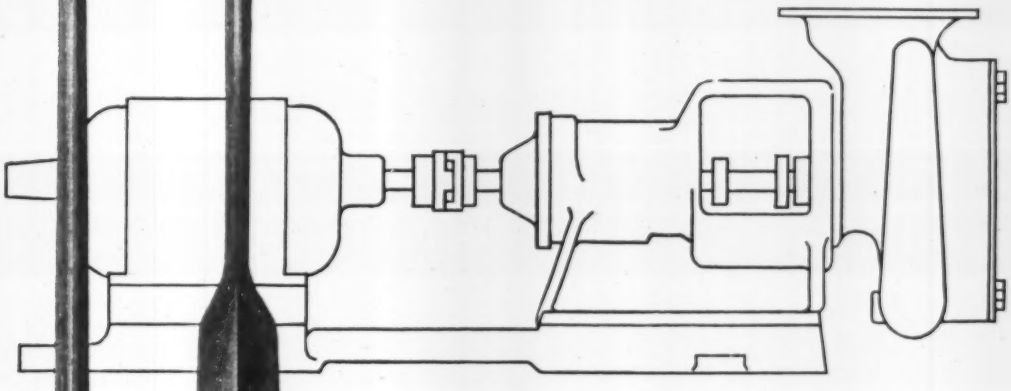

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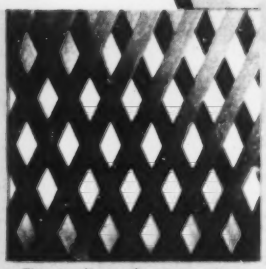
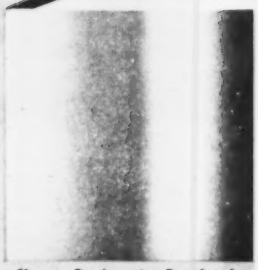
Mirror Back — 1 stripe Chrome Steel is used. Decorative and durable.

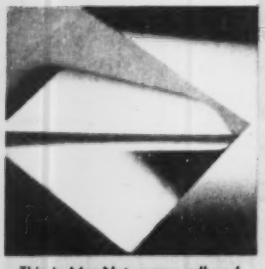


This is diamond stripe pattern, available in any desired base metal.



Chrome Steel, satin. Pre-plated. Chrome available in sheets, coils.

For broiling — a compact, beautiful electric infra-red combination Rotisserie and Broiler. Uses Nickeloid pre-plated Chrome Steel.

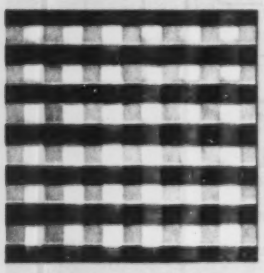


This is Mar-Not, paper adhered, to ease fabrication and handling.

This is Copper plated steel. Lacquer coat recommended.

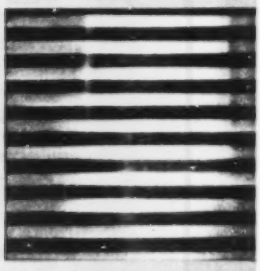
Steel base metals available in coils up to 24" wide.

For door chimes — ivory plastic cover with satin brass or chrome tubes of pre-plated steel.



This is square crimp Chrome Zinc. Other crimps also offered.

Pre-plated metal, Chrome bright. May be plated one or two sides.

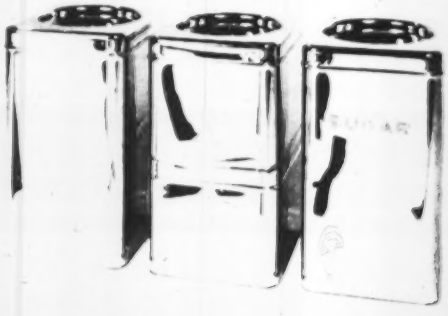


Horizontal stripe pattern; a striking, modern pre-plated design.

In the design and construction of your product, there may be practical possibilities for the adaptation of Nickeloid pre-plated metals. The basic soundness of pre-plating (finishing before fabrication) was never more apparent than today. This 55-year-old idea is being successfully proved on thousands of applications to be seen on the counters and shelves of the American marketplace.

BUILD QUALITY INTO YOUR PRODUCT

Kitchen canister set. A popular housewares item, made of Chrome Steel, bright finish.



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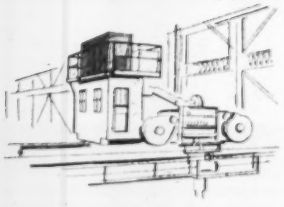
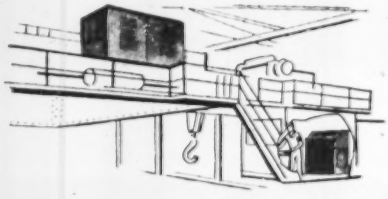
CRANE CAB COOLERS AND CONDITIONERS

No matter what radical temperature variations or atmospheric conditions occur in your industry, there's a Dravo Crane Cab Cooler or Conditioner available to protect your crane cab operator, safeguard his health, increase his efficiency and alertness and improve safety and production records in your operations.

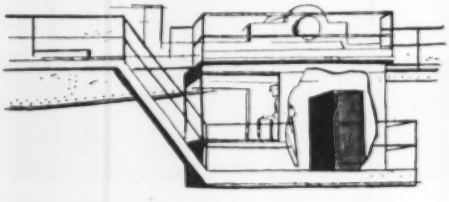
Dravo Crane Cab Coolers and Conditioners provide complete air conditioning, filter the air, remove dusts, dirt and fumes; heat the cab in winter, cool it in summer and provide constant ventilation the year around.



SELF-CONTAINED COOLERS—mounted alongside the cab or on the cab roof. Only electrical leads and connections required. Thermostat control—fully automatic—maintains 85° F. temperature with ambient temperatures up to 175° F. Ideal for "hot spots" in steel and other metal-working industries.



SPLIT-TYPE COOLERS—installed on the crane in two sections—the heavy condenser unit *on the crane* wherever you want it—the light cooling section *in the cab* with the operator. Two sections joined only with refrigerant pipe and electrical connections.



SMALL HEATERS AND VENTILATORS—especially designed to filter dusts and dirt, remove fumes, provide constant ventilation, supply heat in winter. Ideal for cranes in quarrying, slag, cement and similar industries.

One Source of Supply— Easy Installation

Dravo is your *one source of supply* for all crane cab coolers and conditioners. Units are quickly and easily installed with a minimum of downtime required. Parts are interchangeable on all units.

Available for Immediate Delivery

No delays in getting the units you want. For more information write for a complete catalog—or phone your nearest Dravo sales office and have our representative call on you.

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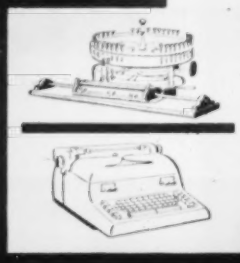
The operator controls the motions of all units from this pendant on a Lucas Horizontal Boring Machine.



Machines for Making Progress

THE price of a thousand things like typewriters, refrigerators, and hardware **must** be kept within people's reach. Otherwise progress stops short and business hits the skids.

The improved metalworking efficiency of machines like New Britains and Lucases have kept manufacturers' costs from sailing out of sight as a result of high material costs, wage hikes and soaring taxes.

Have you made full use of really modern machines in your own business since World War II? Or will high manufacturing costs threaten your ability to compete successfully when the going gets tough?

New Britain four, six and eight spindle Automatic Chucking Machines set the standard for industry because

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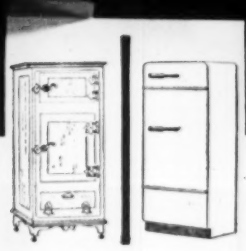
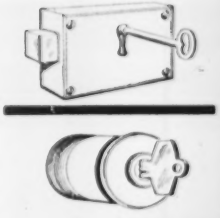
NEW BRITAIN +GF+ COPYING LA



they are designed from the ground up for their specific job. Open end construction provides maximum accessibility to all tools plus convenient chip removal. Built with the rigidity for the heaviest cuts and fastest speeds. Many exclusive features assure permanent accuracy.

The New Britain +GF+ Copying Lathe is built on a new principle, with copying saddle mounted below the spindle and no conventional bed to accumulate chips which fall free and accumulate through the back of the machine. Every control is at the operator's finger tips and the template or prototype is also on the operator's side of the machine. Powerful drive and a wide range of speed and feed ranges make the New Britain +GF+ a profitable producer on short or long runs.

A Lucas Precision Horizontal Boring, Drilling and Milling Machine combines the accuracy required in jig and fixture work with the power and rigidity for heavy milling operations. Pieces ranging from small dies to very large pieces weighing up to 50 tons may be handled on a Lucas. Automatic Power Positioning makes it a time and money saver for long run repeat operations as well as fast single setups.



THE NEW BRITAIN MACHINE COMPANY

New Britain-Gridley Machine Division
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Lucas Machine Division
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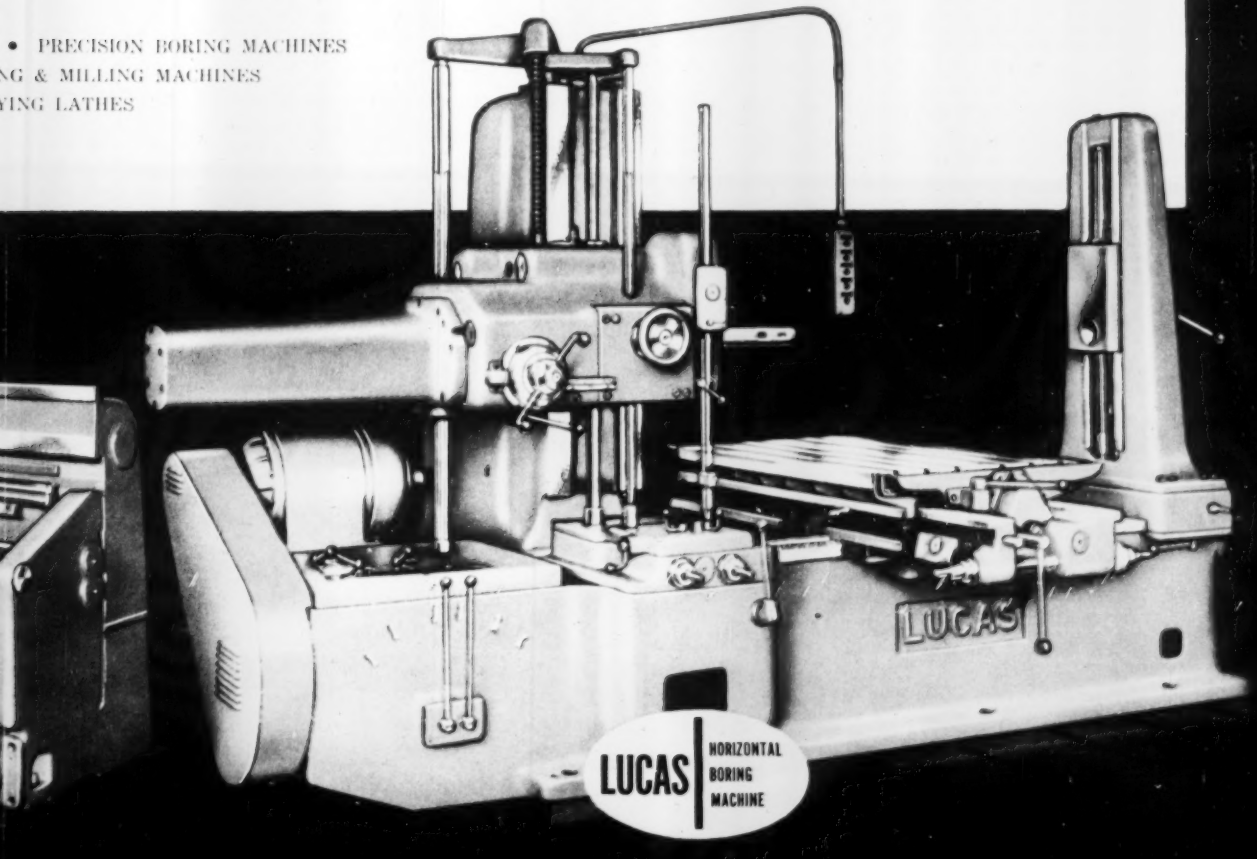
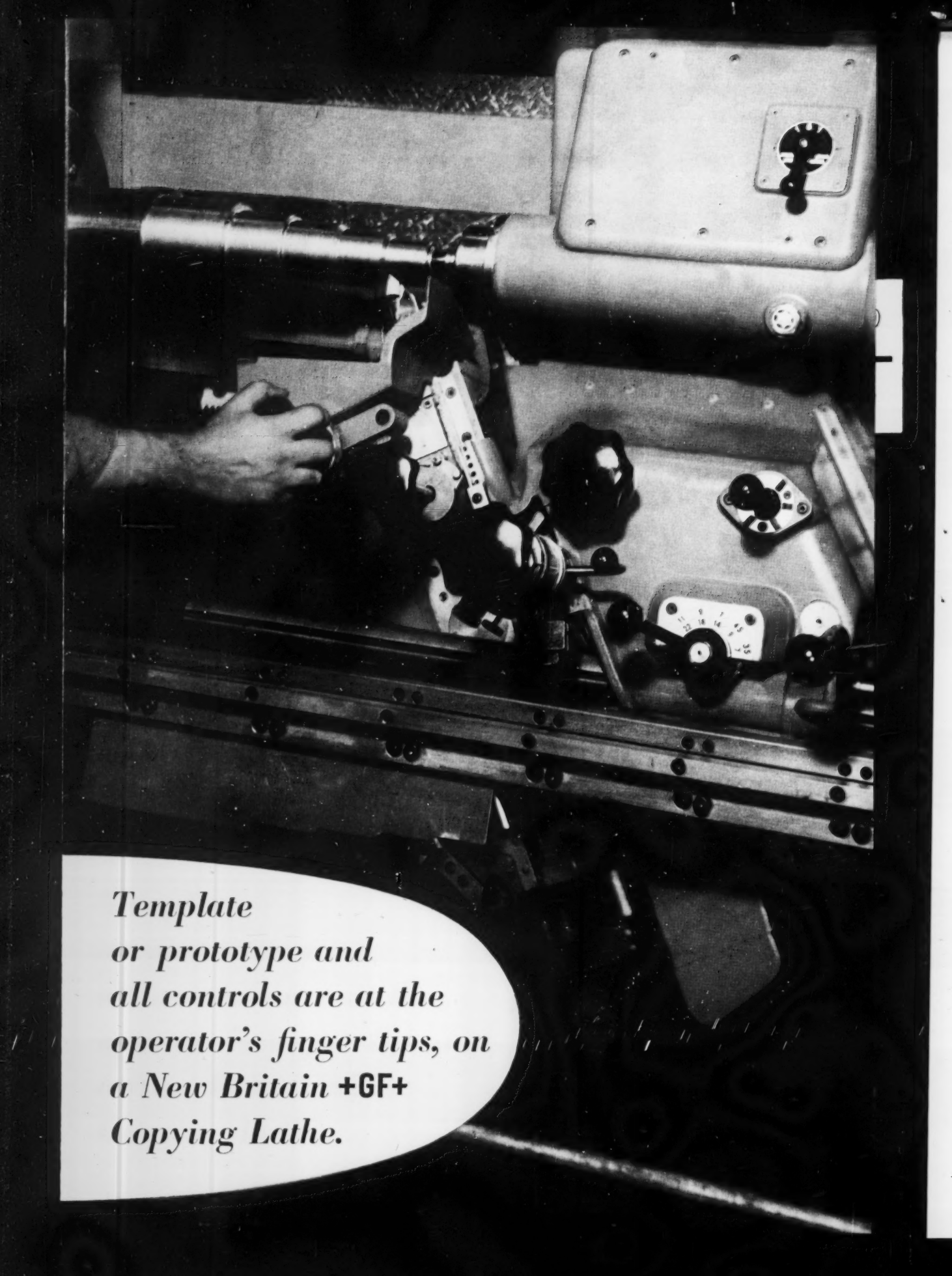
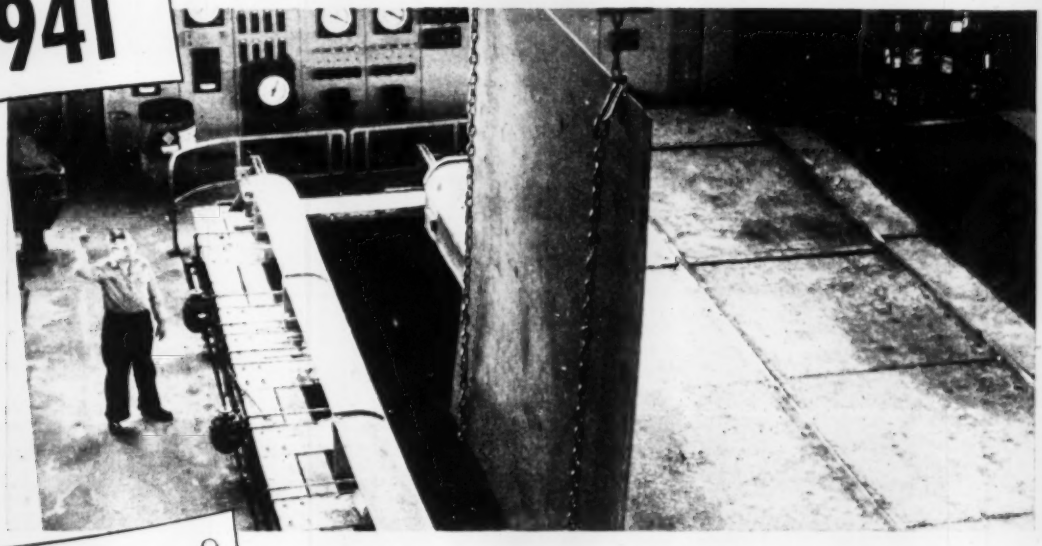



Template
or prototype and
all controls are at the
operator's finger tips, on
a New Britain +GF+
Copying Lathe.

1941 —Du Pont introduces Sodium Hydride Descaling



TODAY —Over ½ of the Major Stainless Steel Producers Use This Economical Process

Nearly one-third of the total U. S. prime production of stainless steel is cleaned in the hydride descaling units operated by today's major producers of the metal. This modern, economical method of removing oxide scale is used also by many fabricators to descale stock in process, finished stampings, machined parts and a wide variety of large and small forms. Just one fast cycle—including fifteen seconds to twenty minutes in the hydride bath—is all it takes to get a thorough cleaning, without pitting or loss in base metal.

Manufacturers using Du Pont's Sodium Hydride Descaling process find that it eliminates the need for scale softening or breaking operations, which were used frequently to condition metal for other cleaning methods.

The process is simple, easily installed, maintained, and operated. Capital investment is low. A large volume and variety of work can be handled in a small space and in a short time. Equipment can be manual, conveyorized, or continuous, designed to meet your requirements.

Let us tell you how this process can fit into your production program. We will be glad to study your requirements, give you specific recommendations about design and selection of equipment. And we will give you technical assistance in starting up—help you train operating men.

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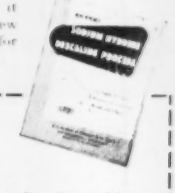
More detailed information about the process—how it works, what it can do for you—can be found in our new book. Call our nearest office or use the coupon below for your copy.



DU PONT
Sodium hydride process for positive descaling

DU PONT

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Electrochemicals Department
Wilmington 98, Delaware

Please send me more information on the Du Pont Hydride Descaling Process: advantages, applications, equipment used. I am interested in cleaning _____ products.

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in interchangeable sprocket assemblies

- Better Design
- Broader Size Range
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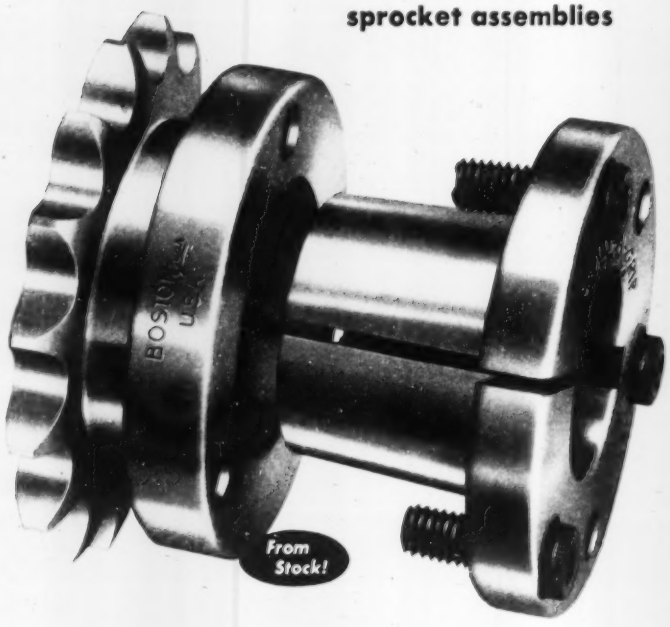
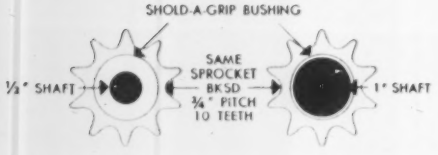
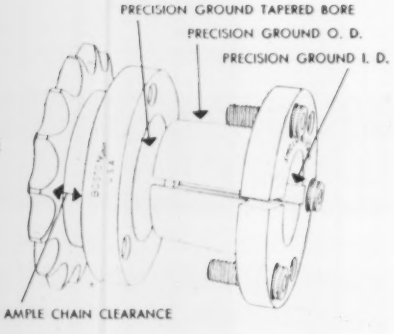


The New SHOLD-A-GRIP®

INTERCHANGEABLE TAPERED BUSHINGS





Accomodates MORE Sprocket Sizes

In the SHOLD-A-GRIP Sprocket, holes for fastening set screws are in the shoulder. Thus, no metal is cut from the sprocket itself. This assures maximum strength, and permits cutting a minimum number of teeth with a maximum size bore. SHOLD-A-GRIP Sprocket Pinions can be fitted to a wider range of shaft sizes — from ½" to 2½" — easily and quickly with SHOLD-A-GRIP Bushings.

Permits Use of SMALLER Sprocket Pinions

The unique shoulder construction brings smaller sprockets into the interchangeable class. For example, Sprocket BKSD ¾" Pitch with 10 teeth can be used on any size shaft from ½" to 1" by inserting the correct size SHOLD-A-GRIP Bushing.

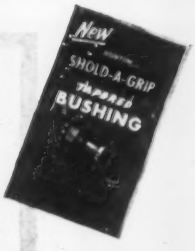
Gripping Power Exceeds Chain Strength

PRECISION-GRINDING of tapered bore of SHOLD-A-GRIP Sprocket, and of inside and outside diameters of SHOLD-A-GRIP Bushing assures:

1 Equalized gripping power the entire length of bushing (even if shaft is not to size).

2 Maximum gripping power. Tests show CHAIN WILL BREAK before SHOLD-A-GRIP will SLIP.

Look over the SHOLD-A-GRIP, and see why it is your best buy. Get complete details...ask your BOSTON Gear Distributor, or write for the new SHOLD-A-GRIP folder. Boston Gear Works, 73 Hayward St., Quincy 71, Mass.

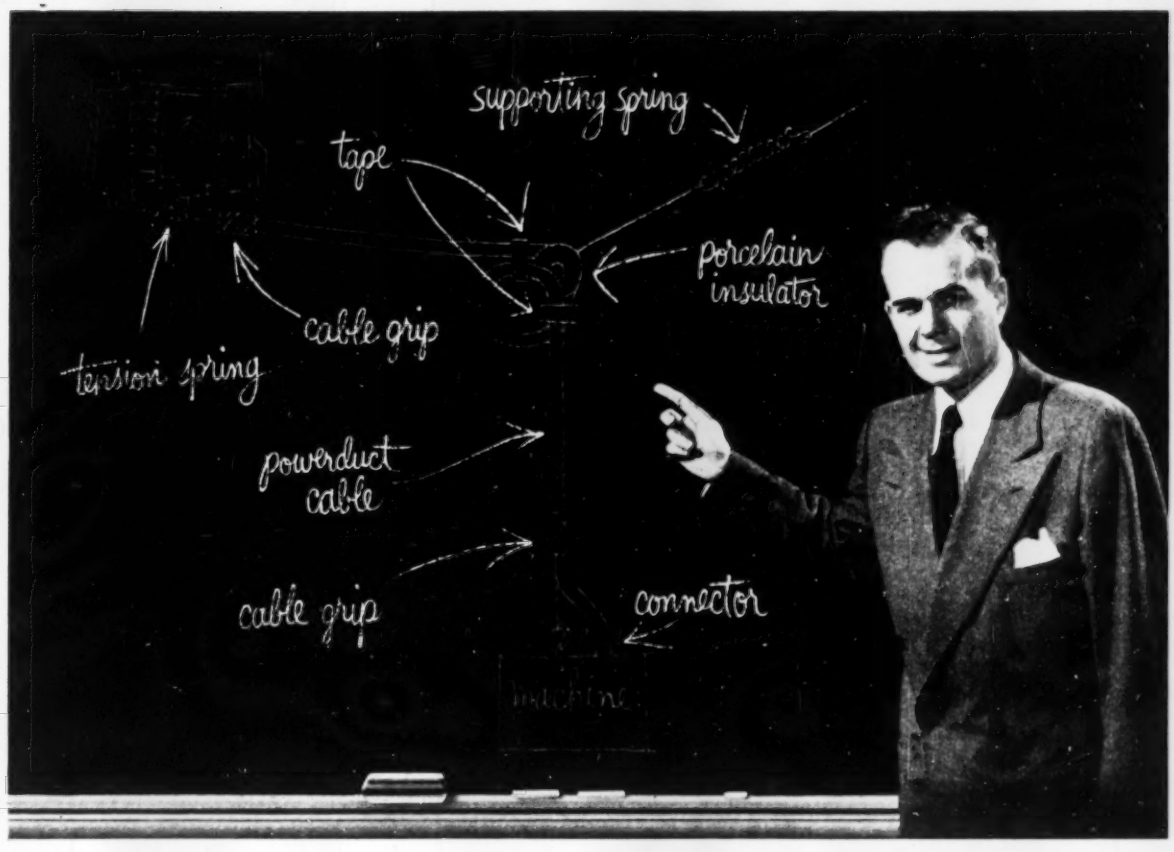


BOSTON Gear

POWER TRANSMISSION PRODUCTS

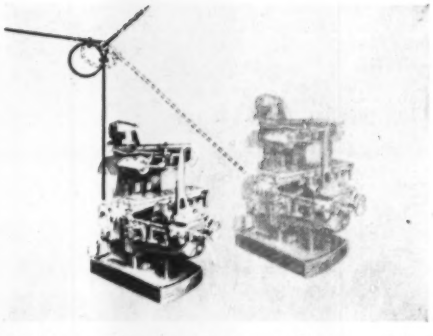
OVER 5000 STOCK ITEMS

OFF-THE-SHELF DELIVERY FROM STOCK AT YOUR NEARBY BOSTON GEAR DISTRIBUTOR



See how easily flexible Powerduct Cable plugs in. Spring keeps cable taut. For simplicity of installation and relocation, compare this cable with conduit.

No busduct system is truly flexible without this New Powerduct Cable



Mobility of machinery is increased. Powerduct Cable adds to usefulness of many types of equipment.

the right cable for the job

ANACONDA®

wire and cable

It's the only nonmetallic-armored busdrop cable UL approved for this hard use; cuts cost of relocating machines

Your plant may well suffer from hardening of the power arteries. Here's why. Even if you have a modern busduct system, it may be flexible *only so far as it goes*. You may still have to rip out permanent or semi-permanent wiring every time you rearrange important machines. That's costly.

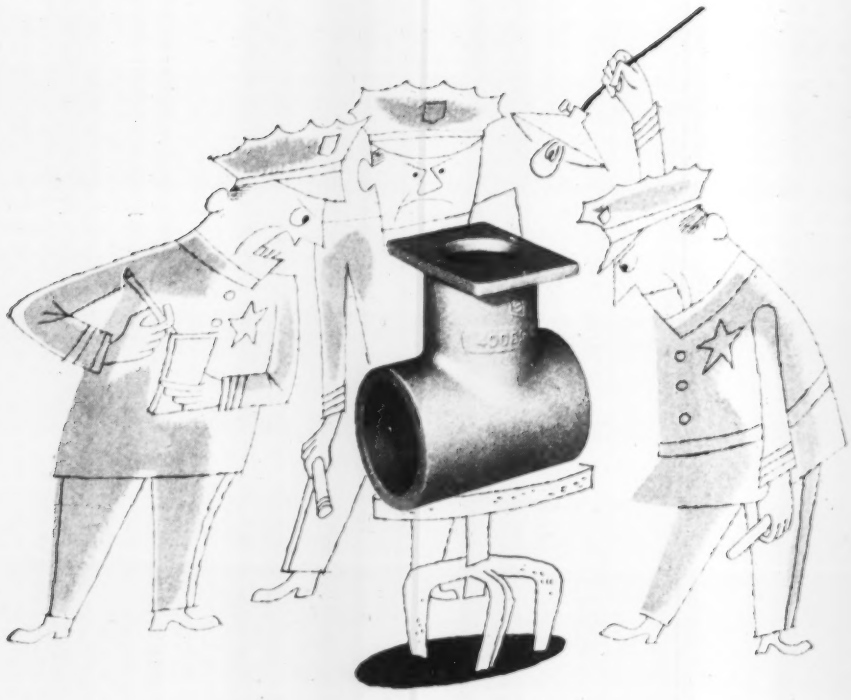
Here's how to remedy this situation. Match your present busduct system with money-saving ANACONDA Powerduct Cable. It's the only cable of its type approved by Underwriters' Laboratories, Inc. for busway branches under section 3646, 1951 National Electric Code.

You save many ways. Powerduct Cable is much cheaper to install than conduit. It handles easily. Grips prevent cable creep. No time is lost. You get circuit capacity at any point for any load at any time. It's a cinch to relocate. Coil (see illustration) makes local changes easy.

How tough is it? Its flame-retardant jacket, woven like a fire hose, takes heavy mechanical abuse, won't fray. Cold-flow is no problem. Cutting compounds, oil, acid, water, grease won't harm it.

Plan now to add flexible Powerduct Cable to your busduct system. See your regular supplier and insist on the ANACONDA Trademark—your positive proof of UL approval for this use. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

52372



Booked on Suspicion

. . . and held for further questioning. Every Sivyer casting is considered guilty of flaws until proven innocent. That's why rigid inspection follows each casting through manufacture . . . to insure compositional accuracy . . . internal integrity . . . narrow dimensional tolerances. Every casting carrying the Sivyer ◇S◇ has been through the third degree of painstaking inspection to assure a better casting value for you.

S **The sign of a casting with a "clean record."** Get acquainted with the famous Sivyer ◇S◇ — the sign of better steel castings. Inquiries promptly handled.

S

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SPECIALISTS IN HIGH ALLOY AND SPECIFICATION STEEL CASTINGS

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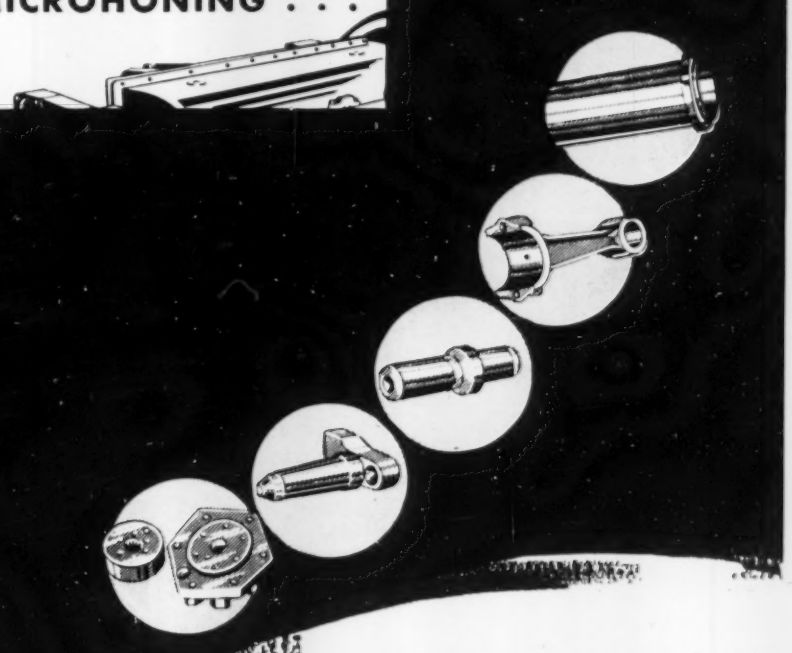
INCREASED EFFICIENCY OF

DIESEL ENGINES

THROUGH MICROHONING . . .



PRECISION PRODUCTION THROUGH MICROHONING
MICRO MATIC

Diesel engines are chosen because of their dependable low cost power. The more precise the fit of parts, the more efficient the engine.

MICROHONING gives to functional surfaces of

- cylinder liners
- connecting rods
- valve guides
- injector barrels
- pump discs . . .

accurate size, true geometry, and the characterized finish—all at production rates.

For Information on MICROHONING of DIESEL ENGINE PARTS
Write for
Cross Hatch

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26 So. Main Street
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MICROMATIC HONE LTD.
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MICROMATIC HONE CORP.
MICRO-MOLD MFG. DIV.
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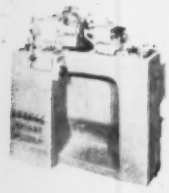
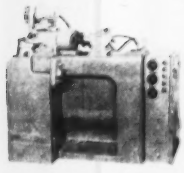
REPRESENTATIVES: Overgard Machine Tool Company, 234 Commonwealth Bldg., Denver 2, Colorado
Hallidie Machinery Co., 2726 First Ave. South, Seattle, Wash. • REPRESENTATIVES IN ALL PRINCIPAL COUNTRIES

bryant
internal grinding



no. 1309-W

Finishes 2 bores and a taper straight and concentric. 2 wheelheads are used on this semi-automatic. Max. traverse stroke, 6". Max. grinding length, 3½".

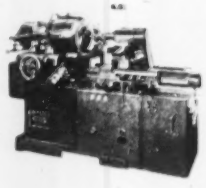


no. 1109

For high production of small bores where accuracy of size and finish are required. Max. traverse stroke, 6". Max. grinding length, 3½".

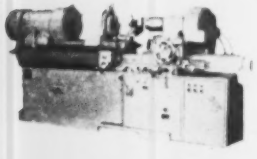
no. 1316

Two wheelheads for high production of jobs requiring face and bore, or face and O.D. grinding. Max. traverse stroke, 20". Max. grinding length, 8".



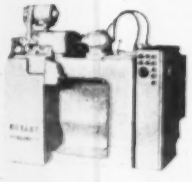
no. 1116

A general purpose hole grinder for tool room, small shop, or general production. Maximum traverse stroke, 20". Maximum grinding length, 8".



no. 1416

Specially designed for grinding bores in long work, such as machine tool spindles. Maximum traverse stroke, 20". Maximum grinding length, 8".



no. 1209

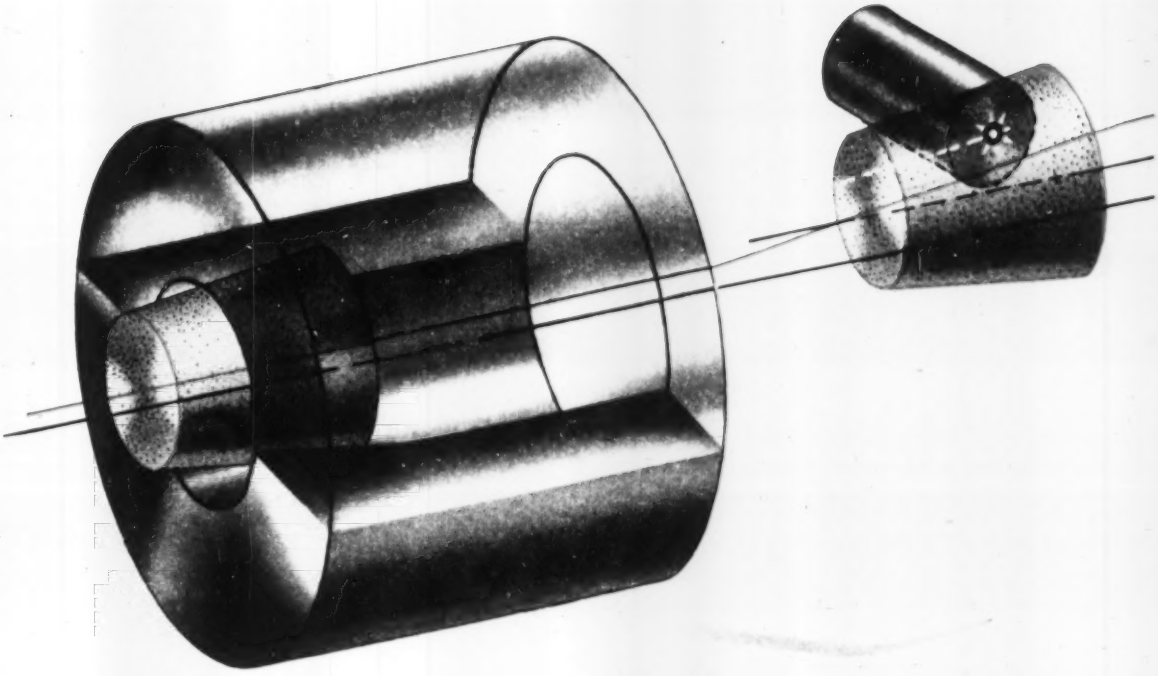
A fully automatic, high production machine for small and medium bore grinding. Max. traverse stroke, 6". Max. grinding length, 3".

no. 1460

For production or single piece hole grinding on parts up to 60" diameter. Max. traverse stroke, 21". Max. grinding length, 16".

no. 2209

For precision and high production grinding of ball bearing races, gears, rolls, bushings, etc. Max. traverse stroke, 6". Max. grinding length, ¾".



IT is common assumption in internal grinding that once the grinding wheel passes the diamond, all errors will be eliminated and the wheel will be a perfect cylinder. It is also assumed that this grinding wheel can produce a straight hole. These two assumptions are true if the wheel path is a straight line parallel with the axis of the wheel as it passes the diamond and traverses the work.

In the illustration, the wheel slides are badly worn and the wheel path is not a straight line. The distortion in the ways causes the wheel to move gradually away from the diamond and the wheel is dressed to a taper as it passes the diamond. Then, as the tapered wheel traverses the work, it will grind only on its large diameter. At the point of reversal the tapered form will be transferred to the work. If the traverse stroke is lengthened, the tapered section will be moved to the new point of reversal. In addition, wheel wear will be excessive, finish will be poor, feed lines may be visible.

Available information advises simply turning the workhead or changing the length of traverse to correct taper. In the case illustrated, neither turning the workhead nor changing the length of traverse will produce a straight hole. The only possible remedy is to straighten the wheel slide ways which will, in turn, straighten the wheel path. The wheel will then contact the work properly, producing correct geometry of the hole, longer wheel life and better finish.

Bryant Chucking Grinder Company
Springfield, Vermont, U. S. A.

Internal grinders • Internal & External thread gages

3 MORE OFFICES

are serving U. S. founders and fabricators of **Alcan aluminum**

You know what's happening to the demand for aluminum. Up and *up* it's gone, yet this is still only the beginning. For aluminum—lightweight, nonrusting, strong, easy to fabricate—is proving its desirability in new uses every day.

To help meet your needs for this modern metal, our associate the Aluminum Company of Canada, Ltd., is constructing power and smelting facilities in Quebec for producing 130,000,000 more pounds . . . and facilities in British Columbia for producing 200,000,000 more pounds of aluminum per year.

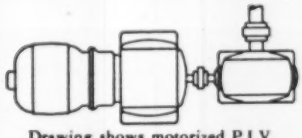
For the convenience of our customers in important U.S. industrial areas, we have opened additional offices—in Cleveland, Chicago, and Los Angeles. Their addresses appear below.

ALUMINUM IMPORT
CORPORATION

Distributing company of the **ALUMINIUM LIMITED** *group, in the Western Hemisphere*
Offices and agents in 40 cities — *Cable address: ALIMPORT*
630 Fifth Avenue, New York 20 · 20 North Wacker Drive, Chicago 6 · 505 Terminal Tower, Cleveland 13
510 West Sixth St., Los Angeles 14 · Av. Ing. Luis A. Huergo 1279, Buenos Aires · Rua Da Quitanda 96, Sao Paulo

Ask yourself these speed reduction questions . . .

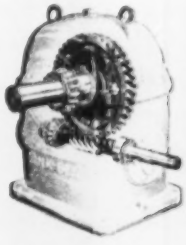
1 Do I want high-ratio reduction with right-angle takeoff?



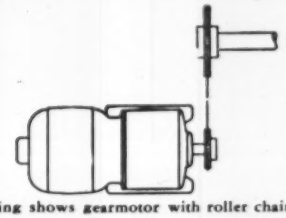
Drawing shows motorized P.I.V. variable speed and worm gear drives direct-coupled.

Then your answer is a LINK-BELT Worm Gear Drive

Reduction ratios: 3.1:1 to 8000:1
Torque: 1,400 to 123,000 in. lbs.
Output shaft rpm: 0.22 to 564



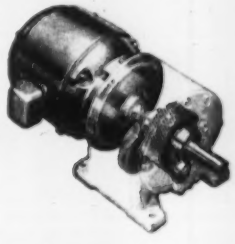
2 Is space at a premium?



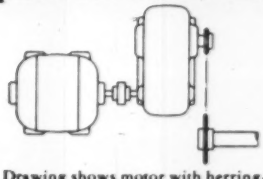
Drawing shows gearmotor with roller chain drive.

Then your answer is a LINK-BELT Gearmotor

Reduction ratios: 6.2:1 to 292:1
Hp range: 1 to 30
Output shaft rpm: 6 to 280



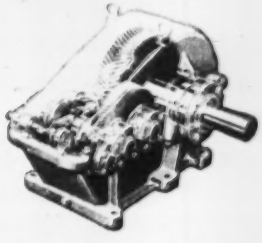
3 Will I need high hp capacity with parallel shaft takeoff?



Drawing shows motor with herringbone gear and roller chain drives

Then your answer is a LINK-BELT Herringbone Gear Drive

Reduction ratios: 2.84:1 to 318:1
Hp range: ½ to 1000
Output shaft rpm: 2 to 600



Yes, LINK-BELT builds all 3

WHATEVER factor governs your speed reducer selection—ratio, space, shaft position, shock loading—you can get the exact answer to your needs from Link-Belt's complete line of enclosed gear drives.

For Link-Belt builds a full range of sizes and ratios in all three types—Helical, Herringbone and Worm. When a Link-Belt power transmission engineer analyzes your conditions, he can recommend the specific drive to meet your specialized requirements.

For complete information, call the Link-Belt office near you.

LINK-BELT

ENCLOSED GEAR DRIVES

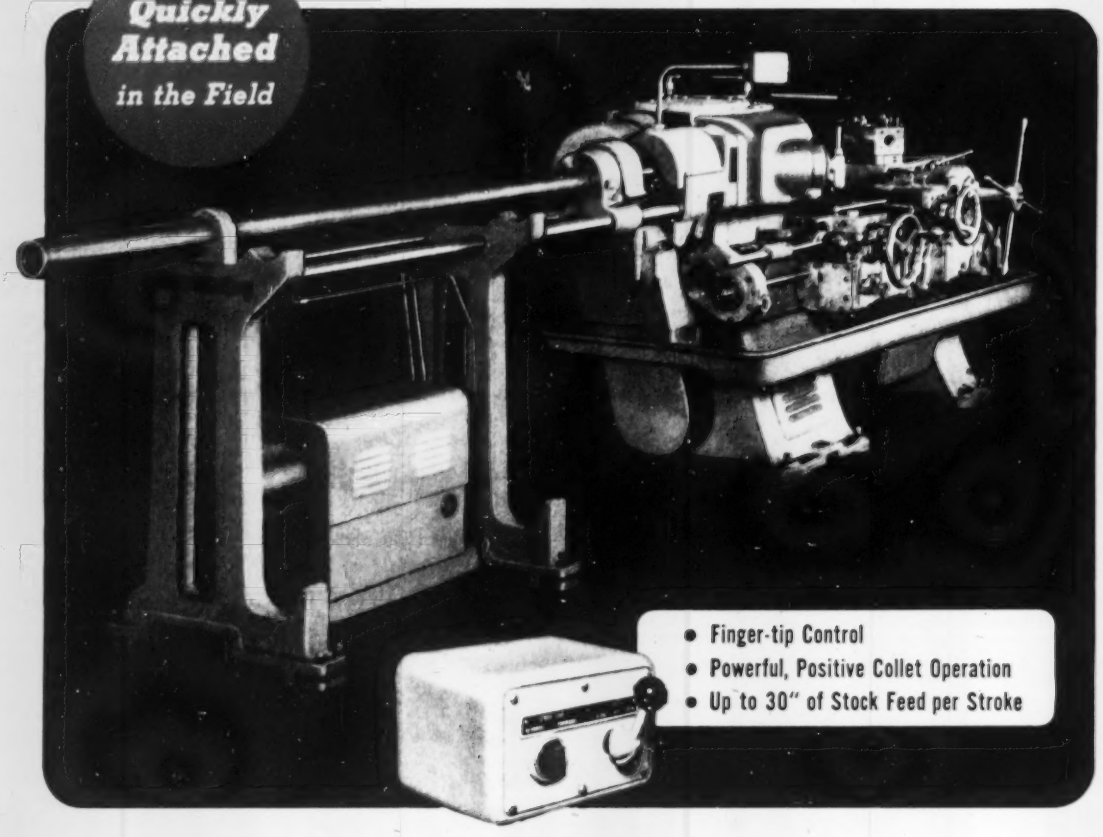
LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities.

Power Operated

COLLET CHUCK AND BAR FEED

Increases production

. . . cuts turning costs



This new, work-saving development is a rigid, heavy-duty hydraulic unit built to handle full capacity bars at full capacity spindle speeds.

It provides effortless finger-tip control of bar feeding and chucking, enabling operators to *maintain a faster, steadier pace throughout the day.*

It can be attached quickly to ANY J & L No. 3, 4, 5, 7A and 8A Universal Turret Lathe in the field.

★ Handles ● ■ or ⬢ stock
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★ Independent hydraulic unit
★ Automatic strip-back cycle
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Without stainless steel, super-high-temperature steels and special electrical alloys, it just wouldn't be possible to build, power and control a plane in the over-600-miles-per-hour class. That is our job: to develop and produce such metals . . . and if you have any problems that involve resisting corrosion, heat, wear and great stress, or require special magnetic properties, we're the people to see. *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.*

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than with any other brand!

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Reasons for Top Quality

The unrivalled, industry-wide record of OLIVE HILL is due to: *unique fireclay* and *superior processing*. Grefco produces OLIVE HILL from Kentucky fireclay, unmatched in suitability for blast furnace brick—using constant control of every step: scientific grain sizing, efficient methods of de-airing, special brick-sizing, and accurately controlled burning.

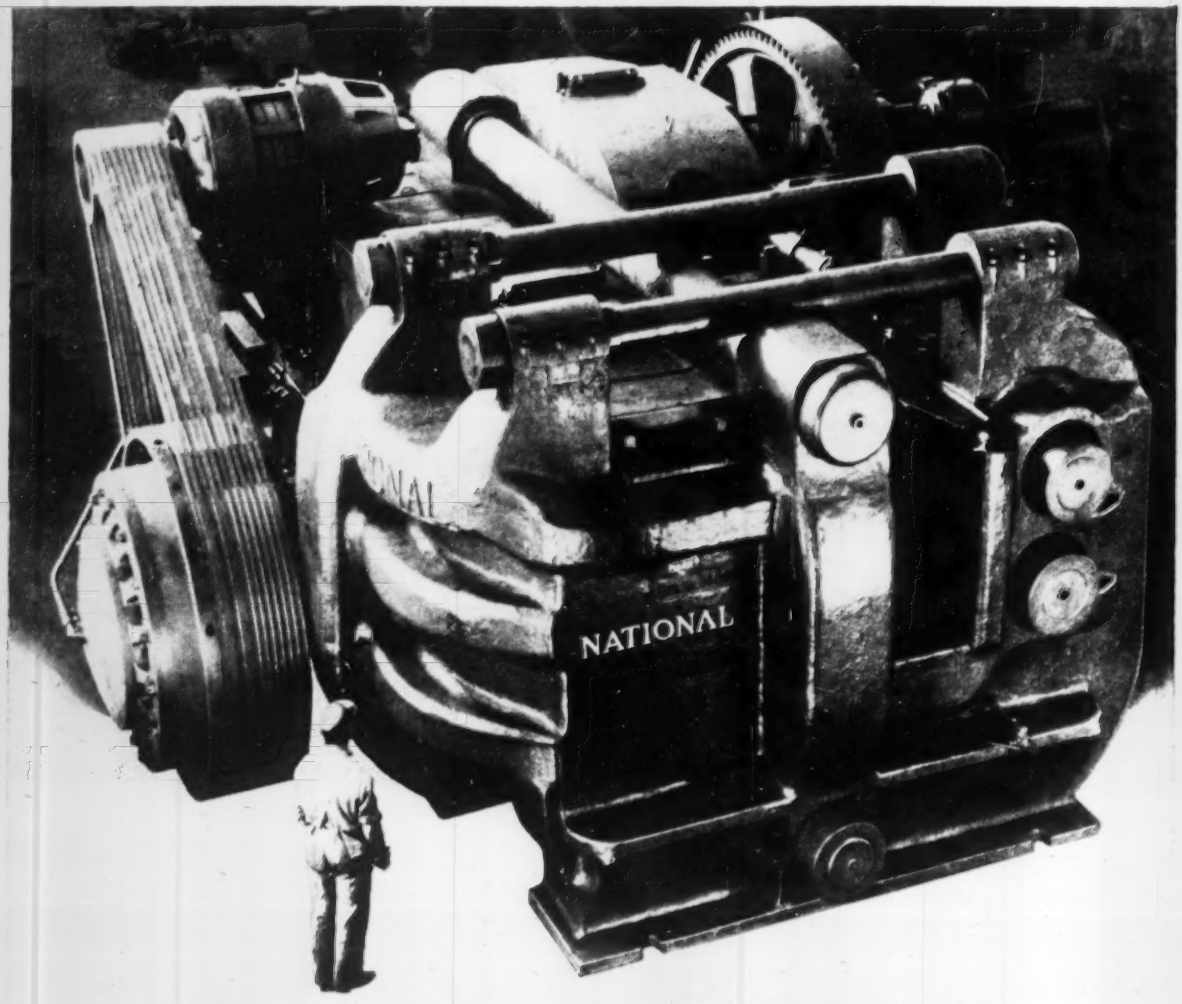
OLIVE HILL Regular and HI-FIRED

The temperature at which OLIVE HILL is burned gives brick of high refractoriness, high density, low porosity, good resistance to carbon disintegration, excellent resistance to abrasion, and high ability to carry load. OLIVE HILL HI-FIRED (Cone 18) brick are virtually immune to carbon disintegration, and have even greater density, lower porosity, and higher resistance to abrasion and deformation under load.

Whether you prefer OLIVE HILL or OLIVE HILL HI-FIRED, or a combination, you may be sure that OLIVE HILL will give you the *world's best value* in blast furnace brick.

GENERAL REFRACTORIES

GENERAL REFRACTORIES COMPANY
PHILADELPHIA



FOR DEEP-PIERCING AND UPSETTING!

Built into National Forging Machines is the ability to take in stride difficult deep-pierce and upset-forging jobs.

Rigid, long-running National upsetters, coupled with National's long-established die engineering experience, result in (1) A superior more-accurate forging; and (2) Increased round-the-clock lower-cost production.

THIS DOOR IS ALWAYS OPEN

Forgemen *still* choose National Forging Machines for their difficult work, and *still* come through our Open Door for assistance with their forging problems.

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DESIGNERS AND BUILDERS OF MODERN FORGING MACHINES • MAXIPRESSES • REDUCEROLLS • COLD HEADERS • BOLTMAKERS • NUT FORMERS • TAPPERS • NAILMAKERS

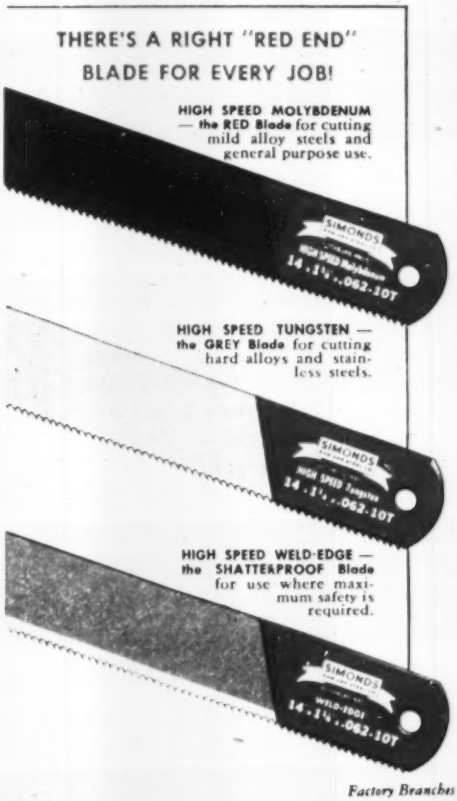
Hartford Detroit Chicago

. . . you can count on it in every

SIMONDS

"Red End"

Power Hack Saw Blade


THERE'S A RIGHT "RED END"
BLADE FOR EVERY JOB!
HIGH SPEED MOLYBDENUM — the RED Blade for cutting mild alloy steels and general purpose use.
HIGH SPEED TUNGSTEN — the GREY Blade for cutting hard alloys and stainless steels.
HIGH SPEED WELD-EDGE — the SHATTERPROOF Blade for use where maximum safety is required.
SIMONDS
14 . 1¼ . .062 . 10T

It's the *plus* you get in "Red End" Blades that makes the difference in overall performance, cutting life and dependability . . . a *plus* that starts with Simonds extra tough Hack Saw Steel, poured and rolled in Simonds own steel mill . . . followed by proven know-how in milling and setting the teeth and in heat-treating for uniform hardness and toughness of every blade. A choice of three types of job-designed blades in all standard sizes is another *plus* that pays off in extra cut-ability and lower hack saw costs for you. Get delivery from stock from your Industrial Supply Distributor.

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FITCHBURG, MASS.

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TOMORROW'S SANDING FABRIC TODAY!

USE WET OR DRY BAY STATE (R) NON-CLOGGING

USE BOTH SIDES No. 320 GRITCLOTH By Machine or Hand

FLAT OR FOLDED
ABRASIVE PRODUCTS
WESTBORO, MASS.

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LONG LIFE

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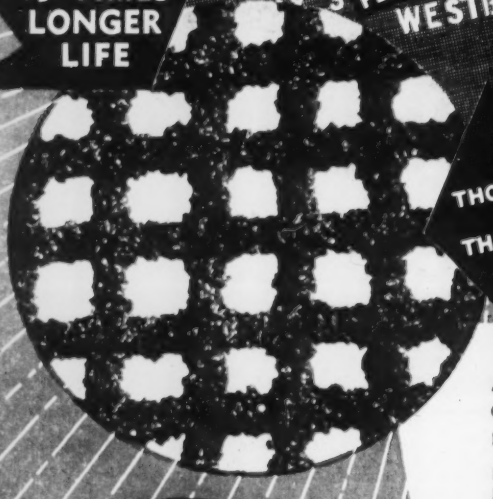

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ANOTHER SPARKLING BAY STATE "FIRST"! Once and for all, **GRITCLOTH** solves the age-old problem of clogging sandpaper and other types of coated papers. GRITCLOTH'S revolutionary open-mesh design lets the removed particles flow right through, and the sharp abrasive teeth keep right on cutting. Actual tests show 10 to 15 times the life of ordinary coated papers.

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IT'S NEW IT'S BETTER IT'S BAY STATE

BAY STATE

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Branch Offices and Warehouses — Chicago, Cleveland, Detroit, Pittsburgh
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In Canada: Bay State Abrasive Products Co. (Canada) Ltd., Brantford, Ont.

HANNIFIN
SIMPLIFIED ELECTRICAL CONTROLS
New control box contains main disconnect, starter, relays and transformer for control circuits; completely meets J.I.C. electrical specifications.
SIMPLIFIED PIPING
Back view shows how simple piping can be when gasket mounted valves are used as J.I.C. recommends
SIMPLIFIED VALVING
Maintenance is easy when valves are grouped on a single manifold for ready accessibility

HERE'S A HANNIFIN HYDRAULIC PRESS

. . . built to J. I. C. Standards for maximum performance, minimum maintenance

•You asked for this new straightening press. Hannifin designed and built it exactly to J.I.C. (Joint Industrial Conference) standards. Basically, this is Hannifin's standard 75-ton press with valving, piping and electrical controls positioned for maximum accessibility. This makes a safer, easier press to maintain.

Of course you can still select the press you need directly from the Hannifin catalog. However, if you want your press built to J.I.C. standards—or if your requirements are otherwise special—a Hannifin Field Engineer can demonstrate how easily a standard model can be modified to exactly suit you.

The Hannifin line is really complete with hydraulic presses for straightening, press-fit assembly, forming, molding, riveting, clinching, punching, staking and marking. There are more than 75 standard models from which to choose—capacities to 150 tons. Hannifin Corporation, 1101 S. Kilbourn Ave., Chicago 24, Illinois.

Hannifin Representatives Are At Your Service in These Leading Industrial Centers

Atlanta, Buffalo, Cincinnati, Cleveland, Dallas, Dayton, Denver, Detroit, Houston, Los Angeles, Milwaukee, Minneapolis, Moline, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis, Seattle; Richmond, Va.; Rochester, N. Y.; South Bend, Ind.; Washington, D. C.; Worcester, Mass. In Canada: TEM Sales Company, Toronto.

HANNIFIN

Hydraulic Presses • Pneumatic Presses • Hydraulic Riveters
Hydraulic Cylinders • Air Cylinders • Air Control Valves

WRITE FOR BULLETIN 130

HANNIFIN CORPORATION
1125 S. Kilbourn Ave., Chicago 24, Illinois
Please send me Bulletin 130 on Hannifin Hydraulic Presses.

Name.....

Position.....

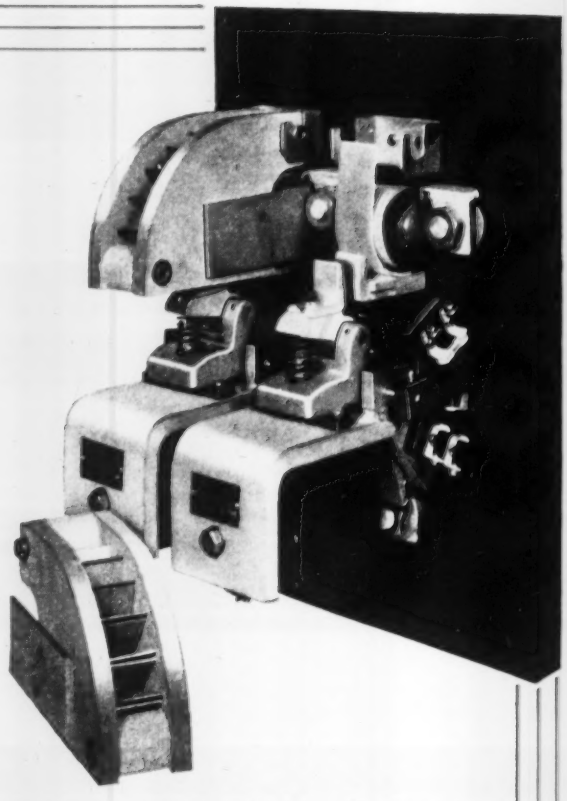
Company.....

Address.....

City.....*State*.....

Developed

. . . with Steel Industry Cooperation



EXHAUSTIVE FIELD AND FACTORY TESTS have proved the remarkable durability of the new Type 260 DC Contactor. In the development of this heavy duty contactor, Allis-Chalmers engineers consulted and worked with steel mills . . . to meet their exacting requirements . . . to comply with their design preferences . . . *to assure you efficient, reliable performance under the most severe operating conditions.*

ALLIS-CHALMERS
Mill Type 260 DC CONTACTOR

Check these Advantages:

INCREASED CONTACT AND CHUTE LIFE — Contact erosion and chute carbonization are reduced by an entirely new and exclusive principle of arc interruption. Pronounced rolling action of the heavy forged copper main contacts minimizes destructive scuffing and extends contact life.

QUICK, EASY INSPECTION — Contacts are exposed for inspection by merely *lifting* arc chute. Each contact is held by a single screw. Auxiliary contacts are mounted on contactor frame in full view. Operating coil is supported by one bolt.

REDUCED MAINTENANCE — No field adjustments are necessary. Silver alloy auxiliary contacts need no dressing. Permanently lubricated *Oilite* bearings, running on stainless steel shaft, eliminate pivot oiling.

DESIGNED FOR EASY MOUNTING — As a replacement device, the Type 260 Contactor can be mounted on insulating panels from 1¼ to 1½ inches thick. No additional drilling is required for electrical interlocks, since they are mounted on the contactor frame.

Call your nearby A-C district office or write to Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 14B6505A. A-3911

ALLIS-CHALMERS A-C ALLIS CHALMERS

NEW Fast Arc Centering Blowout

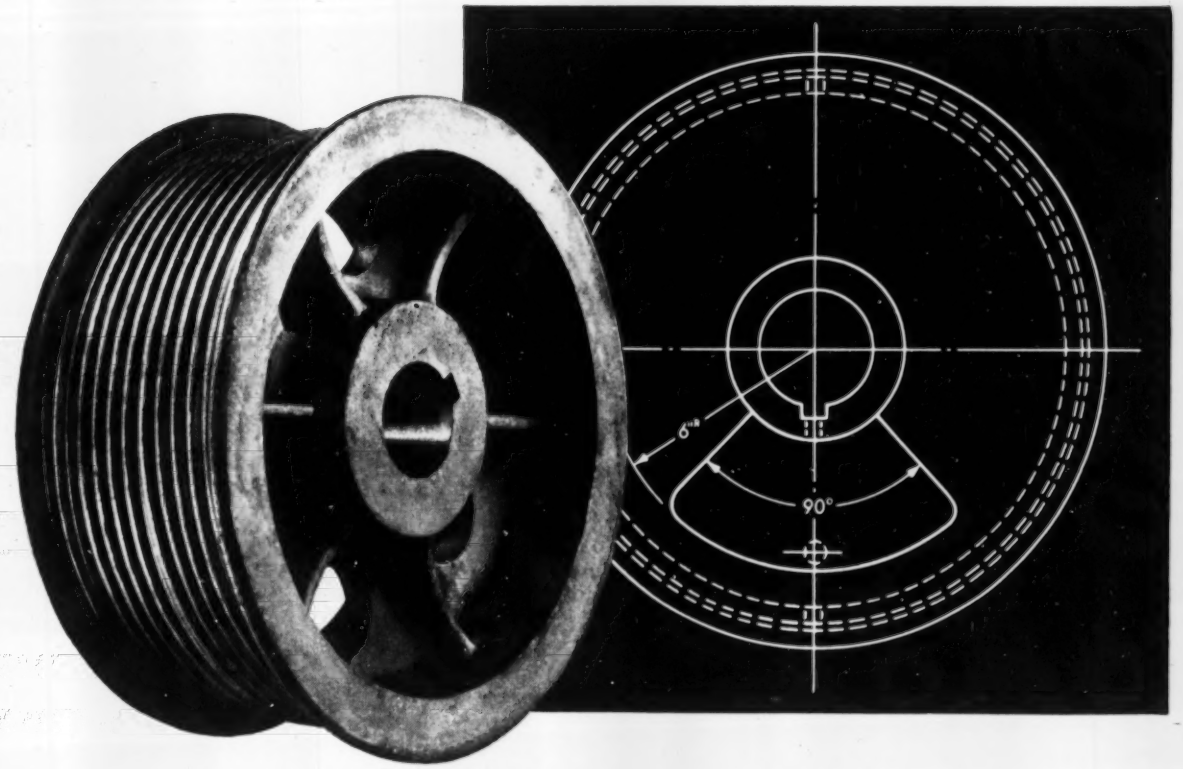
Arc Chute Assembly consists of triangular metal plates with U-shaped segments mounted alternately. Plates are insulated from each other and are placed at right angles to circumference of contact travel.

Metallic segments act as individual blowout coils.

Arc is forced upward along arc runner by blowout coil and impinges on metal segment of arc chute.

As contacts separate further, arc is stretched across an increased number of segments.

Arc rises quickly due to thermal and magnetic action of each individual metal segment.



Costly to fabricate ECONOMICAL TO CAST IN GRAY IRON!

GRAY IRON Characteristics Include:

- Castability
- Rigidity
- Low Notch Sensitivity
- Wear Resistance
- Heat Resistance
- Corrosion Resistance
- Durability
- Vibration Absorption
- Machinability
- Wide Strength Range

The cable drum, shown above, was formerly produced by using plates of various thickness—cutting, assembling, welding and finally machining. Valuable and costly man-hours were expended in co-ordinating the efforts of the several mechanics involved in these operations. Thus, supervisory costs were added to high fabrication costs.

By redesigning the part as a Gray Iron casting, a cost saving of 11% per unit was effected. On a typical order involving 20 castings, the net saving to the customer was $197, *after* initial pattern cost had been written off. Note that grooves are *cast in* instead of machined, effecting a substantial saving in machining time.

In addition to these savings, much longer operating life can be expected, because of Gray Iron's superior resistance to metal-to-metal wear and galling.

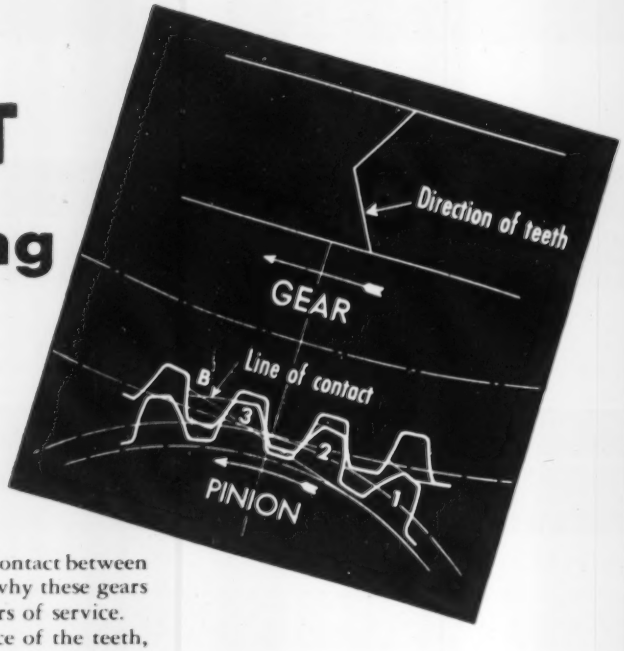
Don't miss opportunities like this to save man-hours, cut costs, and increase operating life by *redesigning in Gray Iron!* Write for technical information on advantages of the Gray Iron casting process.

Make it Better with Gray Iron • **Second largest industry in the Metal-working field**

GRAY IRON FOUNDERS' SOCIETY, INC.

NATIONAL CITY-E. 6th BLDG., CLEVELAND 14, OHIO

BLUEPRINT for longer-lasting GEARS



This diagram, which illustrates the nature of the contact between a pair of Farrel-Sykes herringbone gears, shows why these gears continue to operate smoothly after so many years of service.

The lines of contact are oblique across the face of the teeth, and the pressure is evenly distributed over each tooth, from tip to working depth line. This means that there is no tendency for the contour of the teeth to wear unevenly.

The quiet, vibration-free performance of these gears results from extreme accuracy of tooth spacing, contour and helix angle, and other qualities inherent in the Farrel-Sykes method of gear generation. Precision manufacture and the use of highest grade materials also contribute to long gear life.

Farrel engineers are available to assist in working out unusual problems involving gears or speed reducers. Write for further information.

FARREL-BIRMINGHAM COMPANY, INC., ANSONIA, CONNECTICUT

Plants: Ansonia and Derby, Conn., Buffalo, N. Y.

Sales Offices: Ansonia, Buffalo, New York, Boston, Pittsburgh, Akron, Detroit, Chicago, Memphis, Minneapolis, Portland (Oregon), Los Angeles, Salt Lake City, Tulsa, Houston, New Orleans

HERRINGBONE GEARS

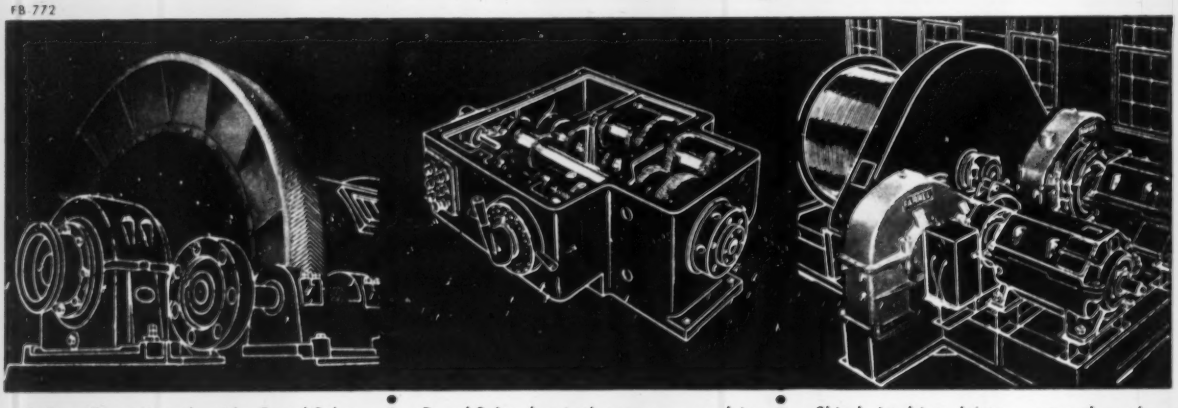
Farrel-Sykes herringbone gears are made in any size from ¼" to 20'0" diameter, for any power capacity and speed.

SPEED REDUCERS

Farrel speed reducing units are available in a wide range of ratios and capacities. Designs include single, double and multiple reduction units, right angle drives and drives to meet special requirements.

Farrel-Birmingham ®

FB-772



Ball mill equipped with Farrel-Sykes gears. The drive gear is 140" diameter, 18" face.

Farrel-Sykes herringbone gears used in the headstock of a lathe.

Skip hoist driven by two motors through Farrel speed reducers.

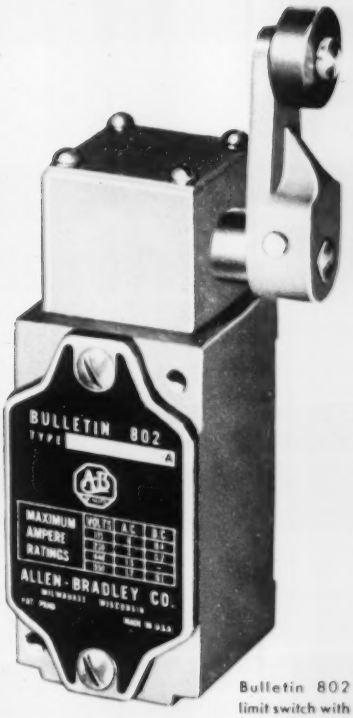
New OILTIGHT LIMIT SWITCHES

Here is a new line of remarkably compact Allen-Bradley limit switches . . . streamlined for fine appearance and built for millions of failure-free operations.

The operating heads of these limit switches may be attached to the switch body in four definite locations, each 90 degrees apart. A large selection of pushrods, lever arms, and other actuating mechanisms is available.

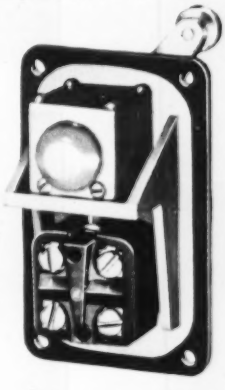
The name plate cover has a synthetic rubber gasket to exclude oil. Terminals are easily accessible by removing the cover plate. The body is threaded for ½" conduit. The switch mechanism is snap-acting, with one single pole normally open and one single pole normally closed contact, electrically separated.

The new Bulletin 802 limit switches are designed for machine tool applications. For further information send for a copy of Allen-Bradley Bulletin 802.



Bulletin 802 limit switch with roller lever

Roller lever type (Front View) for cavity mounting in machine frames



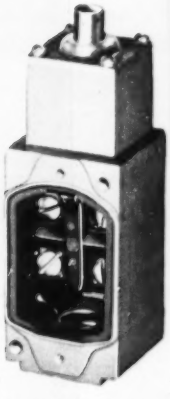
Roller lever type (Rear View) showing terminals for n.o. & n.c. contacts

ALLEN-BRADLEY QUALITY LIMIT SWITCHES

A-B Quality

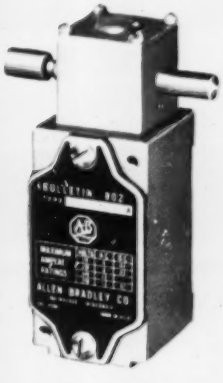
Allen-Bradley Co.
1316 S. Second St., Milwaukee 4, Wisconsin

Pushrod limit switch with roller for vertical motion of the pushrod



Pushrod limit switch without roller—cover off to show terminals

Pushrod limit switch designed for horizontal motion of the pushrod



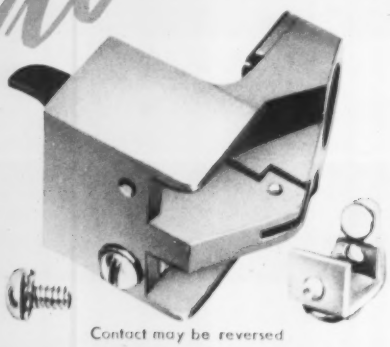
Pushrod limit switch with side pushrod and maintained contacts

Lever operated limit switch with a long and flexible operating rod

1-53-MR

Extra! Handy Auxiliary Contacts

for all Allen-Bradley Sizes 0 and 1 Solenoid Controls



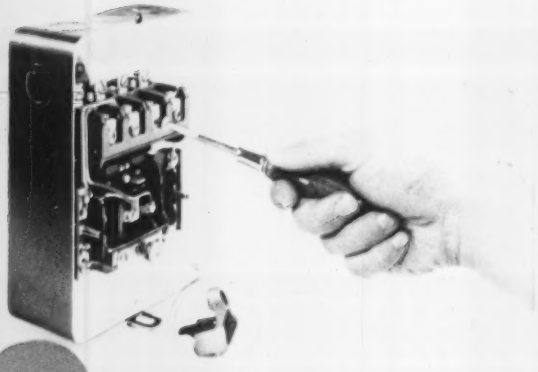
Contact may be reversed by removing one screw

Do you want to add one or more extra pilot contacts to some of your Allen-Bradley solenoid switches . . . to operate indicator lights, relays, or other starters?

These new, compact auxiliary contacts can now be added to the arc hood of any and all standard sizes 0 and 1 solenoid switches. The operating arm of the auxiliary contact is actuated by the up and down motion of the solenoid plunger of the switch to which it is attached.

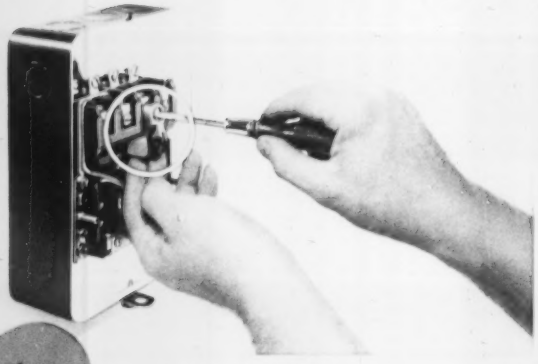
Write for descriptive literature.

SO SIMPLY APPLIED

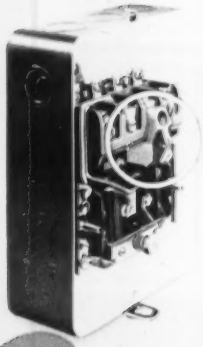


First Remove the terminal screw from the stationary contact block of the Allen-Bradley starter.

Second Insert terminal screw into mounting hole of auxiliary contact to be attached to starter.



Then Screw terminal screw into stationary contact block and fasten auxiliary contact to starter.



Auxiliary Contacts easily changed from n.o. to n.c. operation

The new Allen-Bradley auxiliary contact may be instantly changed from n.o. to n.c. contacts. Removal of one screw permits the instant reversal of the contacts in the contact block. There are no small parts to lose.

Ready to Wire Allen-Bradley auxiliary contact is now ready to be wired for any auxiliary pilot circuit.

T-53-MR

These auxiliary contacts are available for all Allen-Bradley sizes 0 and 1 controls, including contactors, reversing switches, combination starters, Bulletin 709 solenoid starters, and Bulletin 609 manual starters.

Allen-Bradley Co., 1316 S. Second St.
Milwaukee 4, Wisconsin

ALLEN-BRADLEY
QUALITY
SOLENOID CONTROLS

STRETCH OUT YOUR STAINLESS, TOO

There *are* ways to stretch out your supply of stainless.

For example, you may be using a grade or finish of stainless that is in extreme demand when another similar one, not as tight, could do the job adequately.

Our metallurgical staff and stainless fabricating specialists are ready to help you look into this matter and to advise you on more readily-available types of stainless that will do a satisfactory job. Feel free to call on us for this specialized help.

CRUCIBLE first name in special purpose steels

52 years of Fine steelmaking

STAINLESS STEEL

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

REZISTAL STAINLESS • REX HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

Advertisement

ELECTROMET Data Sheet

A Digest of the Production, Properties, and Uses of Steels and Other Metals

Published by Electro Metallurgical Company, a Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y. • In Canada: Electro Metallurgical Company of Canada, Limited, Welland, Ontario.

COLUMBIUM and TANTALUM

Strategic Combination for Imparting Strength and Stability to High-Temperature Metals

Gas turbines for jet aircraft engines, and for other similar engines being developed for marine and railway transportation, have greatly increased the demand for high temperature metals. The present most satisfactory metals are either iron base, nickel base, or cobalt base. They are used in the form of castings and hot worked products, such as forgings, bars, and sheets.

Many of these special metals contain columbium because of its beneficial effect on high temperature strength in both cast and wrought products. Investigations have shown that columbium is one of the key alloys for imparting high temperature strength and stability in metals suitable for operating temperatures up to 1500 deg. F. and above.

Need for New Alloy

Originally, a ferrocolumbium alloy containing approximately 55 per cent columbium and 5 per cent tantalum was employed in the production of many of these high temperature metals. However, with the increased use of high temperature metals and columbium bearing 18-8 stainless steels, the demand for columbium exceeded its availability.

ELECTROMET's Research Laboratories began investigations to ascertain whether an alloy containing more tantalum and less columbium would be equally satisfactory for producing the high temperature metals. Columbium and tantalum alone, as well as combination alloys of columbium plus tantalum, were tested.

Results of Tests

The alloy N-155 was selected for tests. It is an iron base alloy with the following approximate analysis:

Chromium	20 per cent
Nickel	20 per cent
Cobalt	20 per cent
Tungsten	3 per cent
Molybdenum	2 per cent
Columbium	1 per cent
Nitrogen	.15 per cent
Carbon	max. .35 per cent

The data in the table below describe the mechanical properties, at room temperature, of this low carbon N-155 alloy modified with columbium and tantalum alone, and with combinations of columbium plus tantalum. The metal modified with columbium has good strength and high ductility at room temperature. These same good properties are obtained when tantalum, or tantalum plus columbium, is substituted for the columbium.

Stress to rupture tests were also conducted on these same modified low carbon N-155 alloys at 1350 and 1500 deg. F. The data show (see table) that when the columbium is replaced with a mixture of columbium plus tantalum the strength of the metal remains substantially unaffected at 1350 and 1500 deg. F. Also, when all of the columbium is replaced with tantalum, the strength of the metal at 1500 deg. F. is equivalent to that obtained with columbium. Hence, from the standpoint of high temperature strength, columbium and tantalum can be used interchangeably, or in combination.

Help to Industry

ELECTROMET has developed an alloy containing approximately 20 per cent tantalum and 4 per cent columbium for use in high temperature metals and stainless steels. It is known as ELECTROMET ferrotantalum columbium.

Industrial experience with this comparatively new alloy has confirmed the favorable results of the experimental work. The alloy has already aided considerably in augmenting the supply of columbium alloys, since it is just as effective as ELECTROMET ferrocolumbium, with 55 to 65 per cent columbium, for giving strength at high temperatures.

Furthermore, the new alloy is now preferred because of its greater availability. It should be added to a thoroughly deoxidized metal bath to obtain the best results. A recovery of about 95 per cent for the columbium and 85 per cent for the tantalum may be expected.

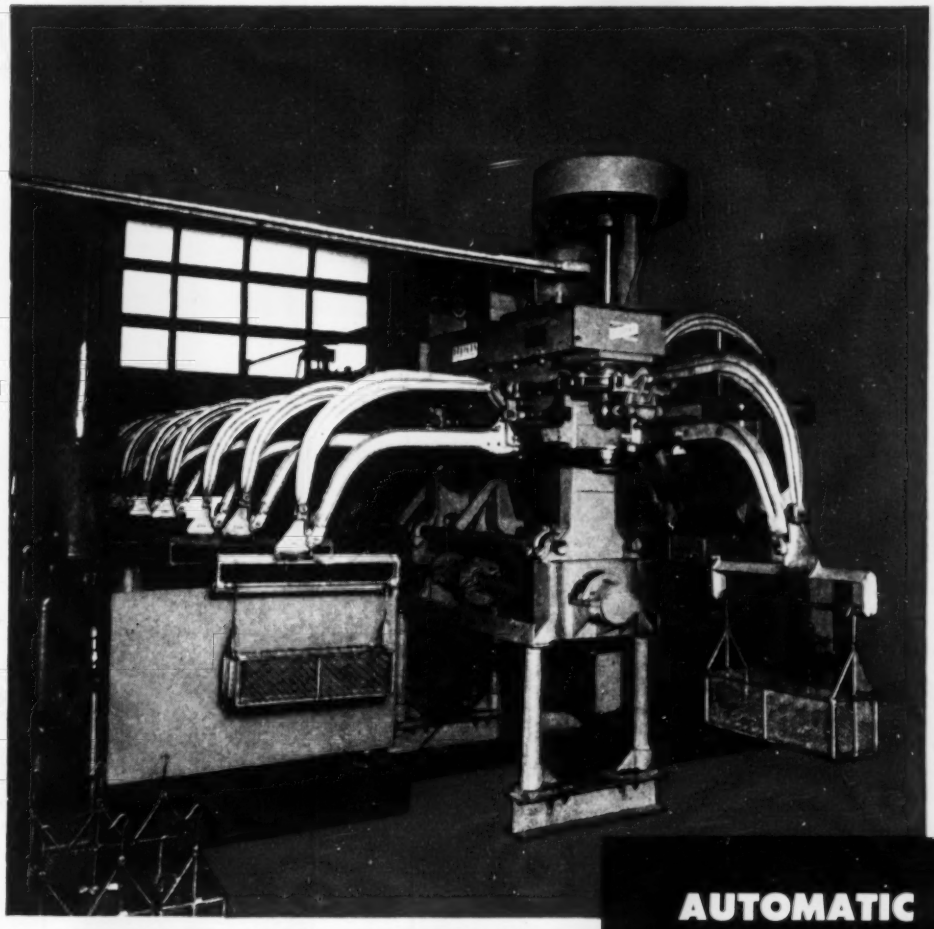
For further information regarding alloys for high temperature metals, write to the nearest ELECTROMET office in Birmingham, Chicago, Cleveland, Detroit, Houston, Los Angeles, New York, Pittsburgh, or San Francisco. In Canada: Welland, Ontario.

Properties of Modified N-155 Alloys Compared*

Typical Analysis, %**	With Columbium	With Columbium and Tantalum		With Tantalum
Columbium	1.13	0.58	0.49	....
Tantalum	0.08	0.64	0.53	1.47
Carbon	0.12	0.13	0.13	0.12
Nitrogen	0.13	0.14	0.14	0.14
At Room Temperature				
Tensile Strength, psi	119,000	123,200	117,500	122,100
Yield Strength, psi	56,700	59,500	52,000	59,100
Elongation in 2 in., %	52	47	57	54
Reduction of Area, %	69	65	69	56
At 1350 deg. F.				
Stress to Cause Rupture, psi				
In 100 hr.	31,000	34,000	33,500	....
In 1000 hr.	23,000	25,000	23,000	....
At 1500 deg. F.				
Stress to Cause Rupture, psi				
In 100 hr.	20,000	20,000	20,500	20,000
In 1000 hr.	15,000	14,000	15,500	15,000

* Tests made on standard samples from one-inch round bars, water-quenched from 2250 deg. Fahrenheit.
** Composition of the base alloy is given in the text.

The term "Electromet" is a registered trademark of Union Carbide and Carbon Corporation.



Stevens full Automatic at National Cored Forgings Company

AUTOMATIC BRIGHT DIP AT NATIONAL CORED FORGINGS CO.

GIVES HIGH PRODUCTION —UNIFORM RESULTS —IN LESS SPACE!

Yes, that's the report of National Cored Forgings Company of South Norwalk, Conn. More work . . . better results . . . with less space . . . thanks to Stevens equipment!

National Cored Forgings Company produces items ranging from lens caps to padlock cylinders. In each case, bright dipping is a necessary step to a bright finish.

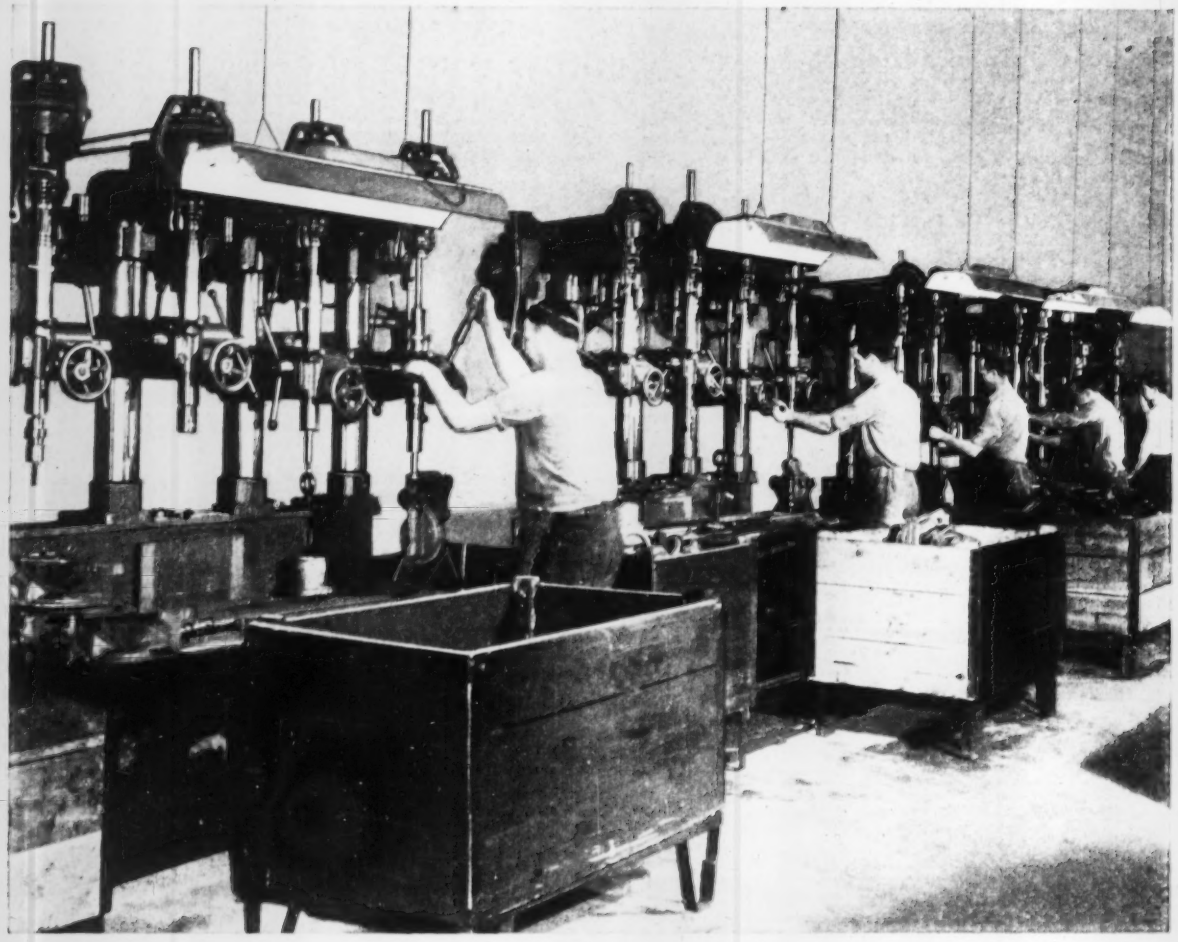
That's where Stevens pays off!

Automatic bright dipping assures uniform results PLUS high production. A Stevens machine supplied the answer to National Cored Forgings Company's high production bright dipping problem.

Why not let Stevens help you solve your plating problems. Call your Stevens representative or write direct. Frederic B. Stevens, Inc., Detroit 16, Michigan.

FREDERIC B.
STEVENS
INCORPORATED
EVERYTHING FOR METAL FINISHING
DETROIT 16, MICHIGAN

BRANCHES: DETROIT • BUFFALO • CLEVELAND • NEW HAVEN • INDIANAPOLIS
IN CANADA: FREDERIC B. STEVENS OF CANADA, LTD., TORONTO • WINDSOR



EASY WAY TO HIT PEAK PRODUCTION!

In this well-known meter plant, as in hundreds of efficient shops, they're jacking up drilling output this simple way: install the easy-handling multiple spindle "Buffalo" Drills your operation requires. You not only eliminate waste setup motions, but you get better accuracy, less worker fatigue and longer drill life.

In the photo above, the men on the four-spindle "Buffalo" No. 22 Drills are able to set up as many as four different drilling, tapping and reaming operations. Production flows right down the line easily and with minimum delays between operations. All controls and adjustment cranks are easily reached, so that these large-capacity machines are as easy to handle as smaller sensitive drills. Let us recommend a drilling arrangement to help cut *your* drilling time and cost!

MULTIPLE SPINDLE "Buffalo" No. 22 DRILLS

"Buffalo" MACHINE TOOLS

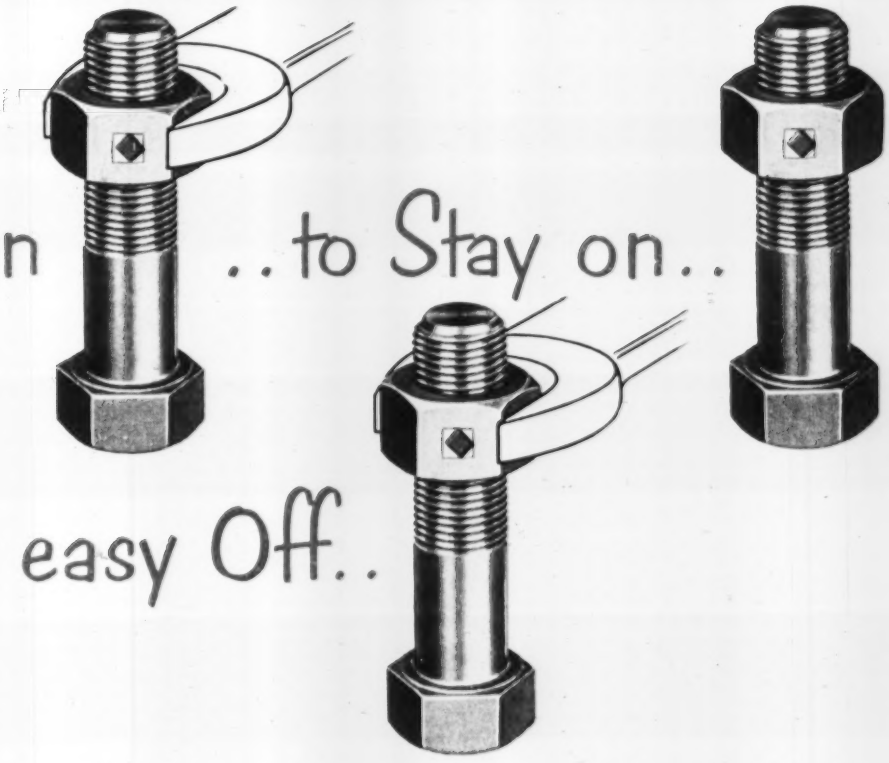
DIAMOND JUBILEE 75TH ANNIVERSARY

BUFFALO FORGE COMPANY

158 MORTIMER STREET BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING PUNCHING SHEARING CUTTING BENDING



Easy on ..to Stay on.. yet easy Off..

Republic Upson "Nylok*" Nuts

It's easy to start a Republic Upson "Nylok*" Nut . . . either end is "up". . . no special tools . . . no special techniques.

Wherever you stop wrenching, that's where the nut *stays* . . . even under severe vibration. The nylon plug in the side makes the nut hold tight.

And when it's time to remove a Republic Upson "Nylok*" Nut, just back it off. The nylon plug can't gall, can't rust. Best of all, the nut is ready to *re*-use . . .

SIZES

Light series tapped ¼" thru ⅝"
Light thick series tapped ¼" thru ½"
Regular sizes tapped ¼" thru ½"
Heavy series tapped ¼" thru ½"

12 WAYS BETTER

Assemble from either end	No special tools
Can be re-used	One piece
Non-galling	Ideal for mechanical feeding
Best wrenching characteristics	No lubricant needed
Won't damage threads	Cold-forged
No special know-how	Lock in any position

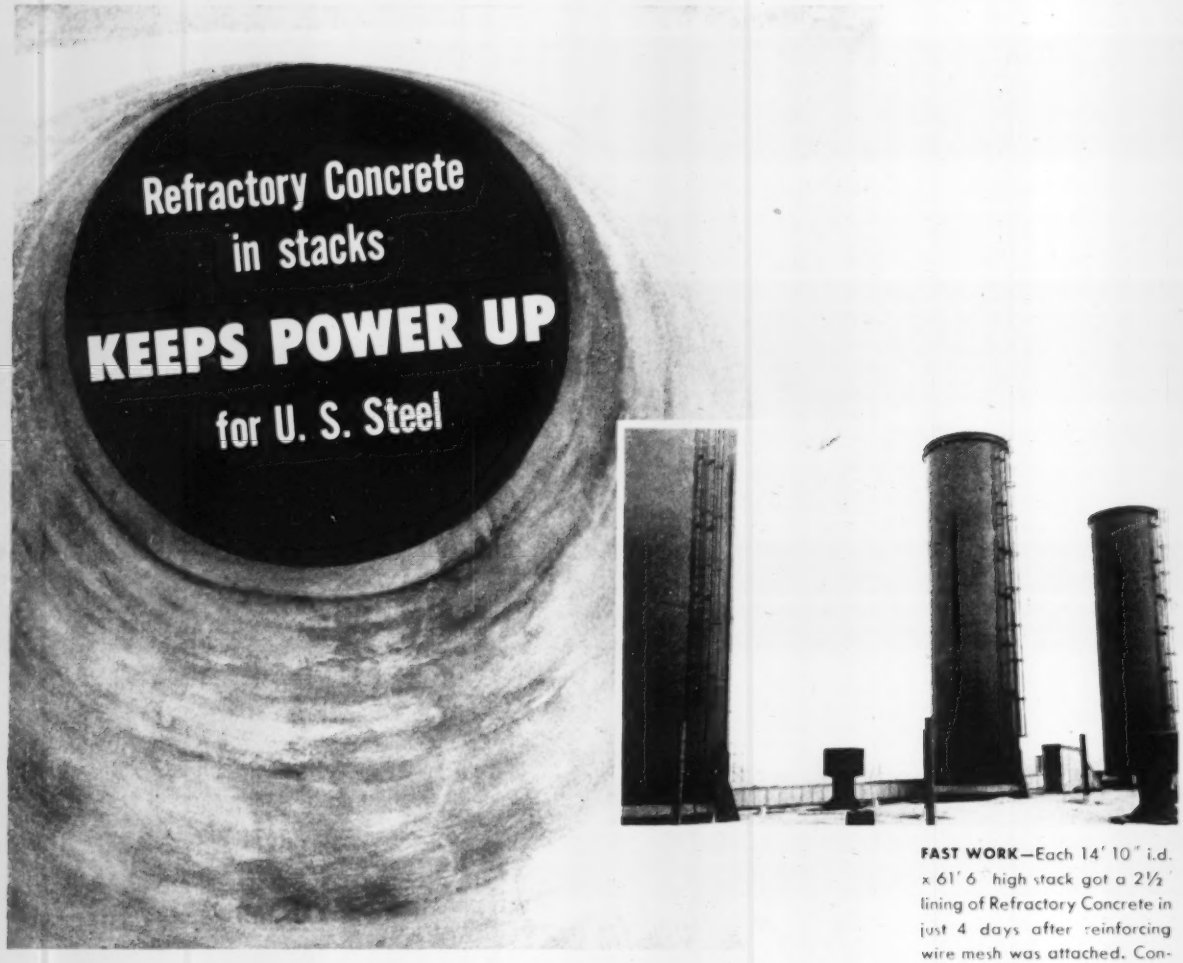
Write for samples . . . tell us sizes you use.

REPUBLIC STEEL CORPORATION
Bolt and Nut Division • CLEVELAND 13, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

Here's how the "Nylok" principle works
A nylon plug inserted in one of the sides of the cold-forged nut forces the nut tight against the opposite threads as the nut is turned on.

*U. S. Pat. No. 2,462,603 and pending applications

Republic STEEL
UPSON QUALITY **BOLTS AND NUTS**



FAST WORK—Each 14' 10" i.d. x 61' 6" high stack got a 2½" lining of Refractory Concrete in just 4 days after reinforcing wire mesh was attached. Concrete made with Lumnite Cement and traprock was "shot" on by cement gun

You're looking down

the smooth, jointless Refractory Concrete lining that protects a power stack at the new Fairless Works. It's the way U. S. Steel assures long, trouble-free stack life. Here's why:

Saves time. Fast, monolithic construction is further speeded by the ability of Refractory Concrete made with Lumnite* Cement to reach service strength in 24 hours or less! *Helps draft.* The one-piece lining prevents "breathing." *Gives long-lasting protection.* Lumnite-made Refractory Concrete resists attack of sulphurous gas and abrasive fly ash, takes heat to 2600°F, has low volume change and withstands thermal shock.

Whether you're lining or rebuilding a stack, it will pay you to look into the enviable record of Refractory Concrete made with Lumnite calcium-aluminate cement—in power, metals and refining industries . . . in fact, wherever heat, corrosion or abrasion are problems.

FOR CONVENIENCE, you may prefer to make Refractory Concrete with prepared castables (Lumnite Cement plus aggregates selected for specific temperature and insulation service—add only water). They're made by refractory manufacturers and sold through their dealers. For more information, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

**"LUMNITE" is the registered trade mark of the calcium-aluminate cement manufactured by Universal Atlas Cement Company.*

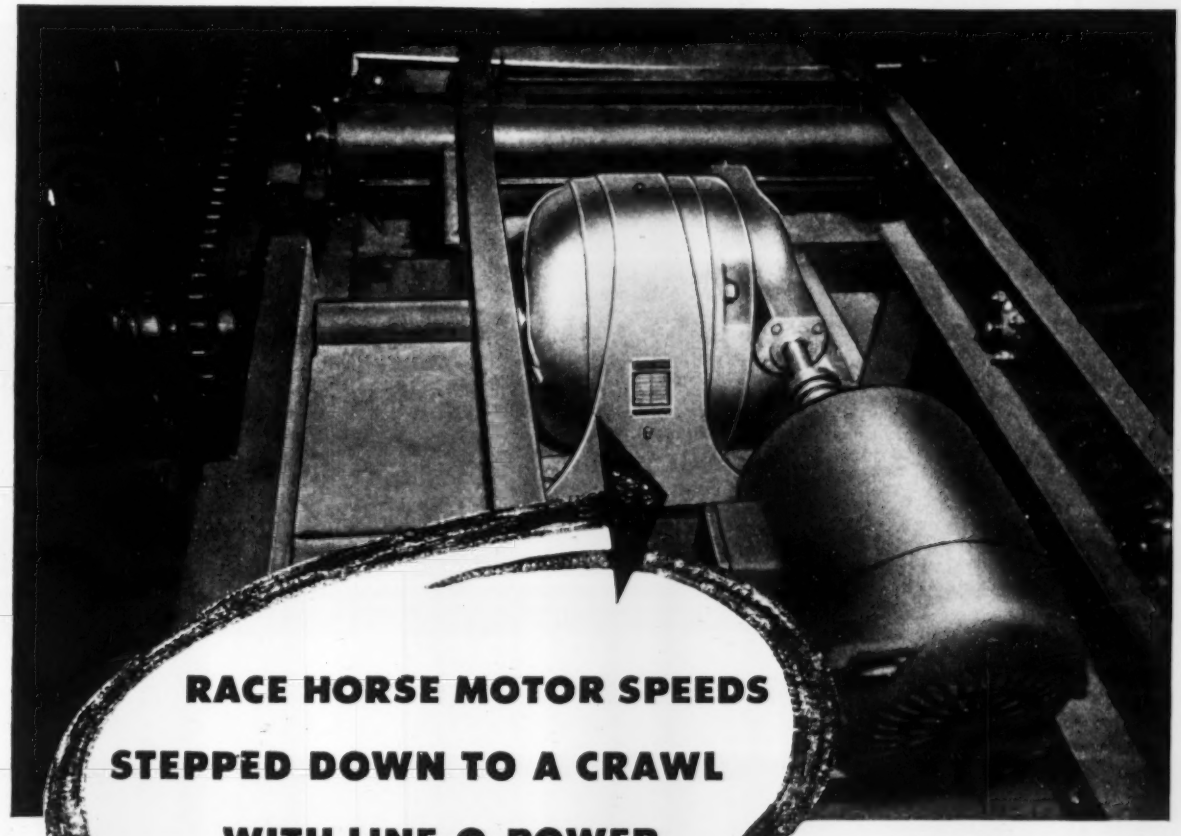
S-L-74

ATLAS® **LUMNITE for INDUSTRIAL CONCRETES**

REFRACTORY, INSULATING, OVERNIGHT, CORROSION-RESISTANT

A UNIVERSAL ATLAS PRODUCT

"THE THEATRE GUILD ON THE AIR"—Sponsored by U. S. Steel Subsidiaries — Sunday Evenings — NBC Network



RACE HORSE MOTOR SPEEDS STEPPED DOWN TO A CRAWL WITH LINE-O-POWER

24WL Right angle Line-O-Power Drive on a Chain Conveyor

Double reduction straight line drive

Triple reduction straight line drive

Double reduction vertical drive

Double reduction right angle drive

On conveyors or other materials-handling equipment, slow speed is essential. With Line-O-Power Drives, it is possible to transform high motor speeds into almost any desired slow end speed.

Here, for example, is a compact Line-O-Power Drive on a chain conveyor. Low in original cost, it provides economical service day in and day out with minimum attention. These drives have proved their value to industry because of their compact size, sturdy construction and high efficiency.

First reduction is taken through precision worm gearing, second and third reductions through Duti-Rated helical gearing. Duti-Rated Gears have file-hard tooth surfaces with ductile cores that permit heavy loading and yet assure long life. Available for straight line service — for right angle service — or for vertical application.

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Evenly distributed ventilation, too. That means air-cooled operation even under severest use—more pressure without burning—faster cut—more composition mileage—and longer life for the buff. Air rushes into those extra large holes at the center, circulates right through the wheel, and escapes at the face. This constant flow of air—plus the fanning effect of the ruffles at the face—*eliminates excessive heat.*

Now take a look at the rest of these features: There's an extra safety factor in the rugged steel ring that anchors the cloth at the center; every buff is perfectly balanced; and that exclusive H-VW-M Red-E-To-Use Face is all set to take composition without raking or truing. Ruff-L-Buffs are available in a wide variety of types and weights for any application—to do a *better* buffing job for *you.*

Top quality buffs are just one of many results of over eighty years of constant electroplating and polishing development—a continuing policy summed up in H-VW-M Platemanship . . . your working guarantee of the best that industry has to offer—not only in buffs—but in every phase of plating and polishing.

For full information on Ruff-L-Buffs as well as all H-VW-M buffs ask for Bulletin B-100.

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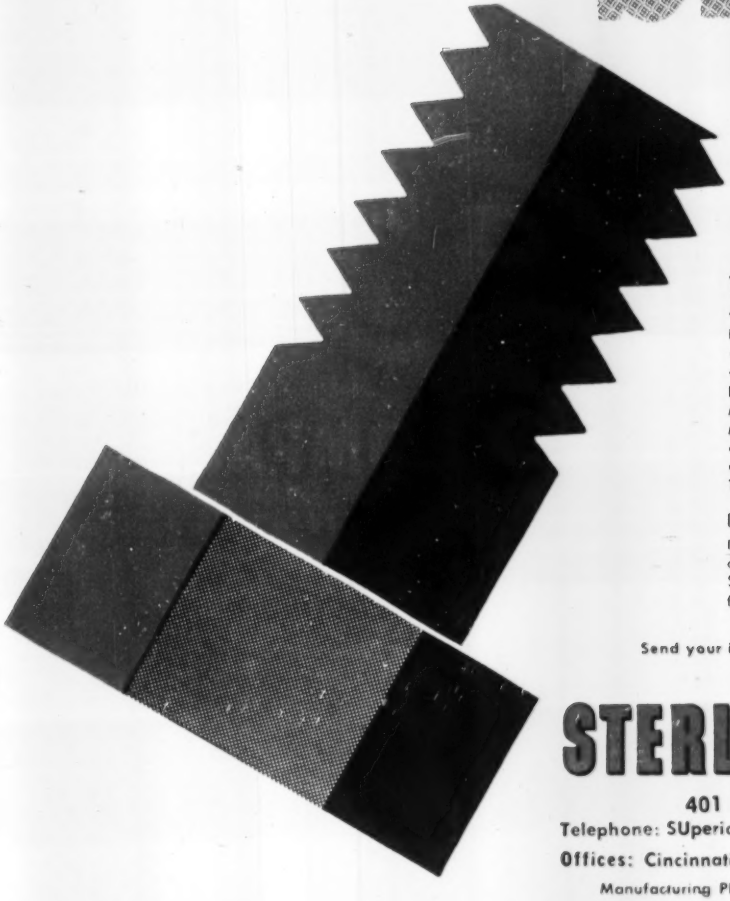

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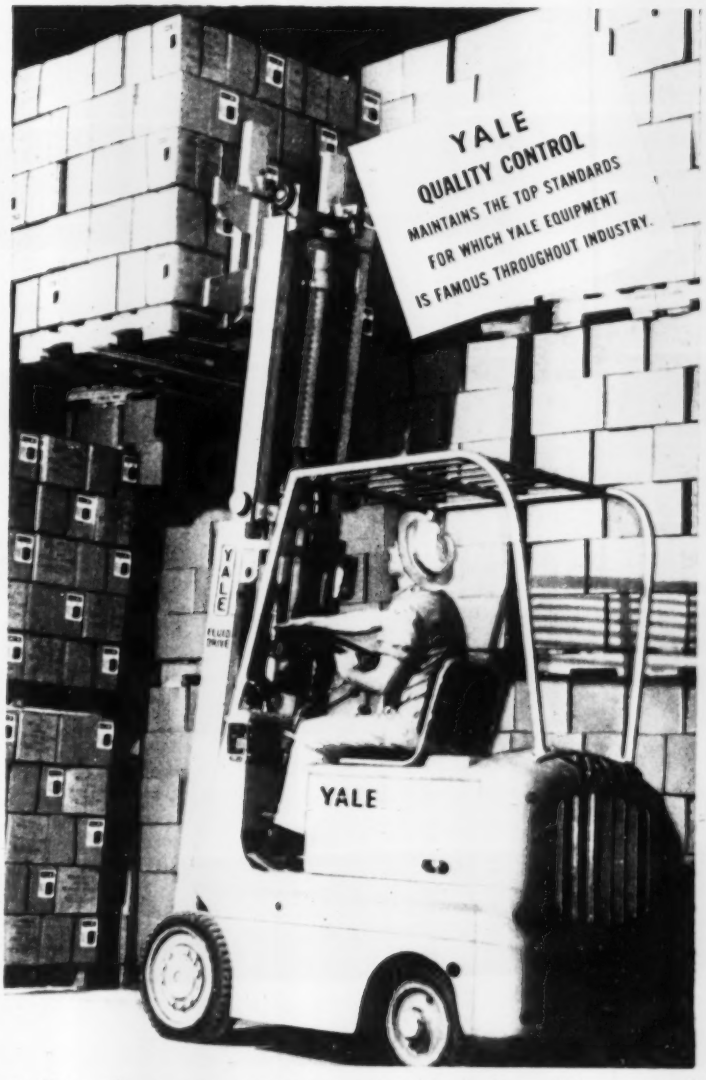

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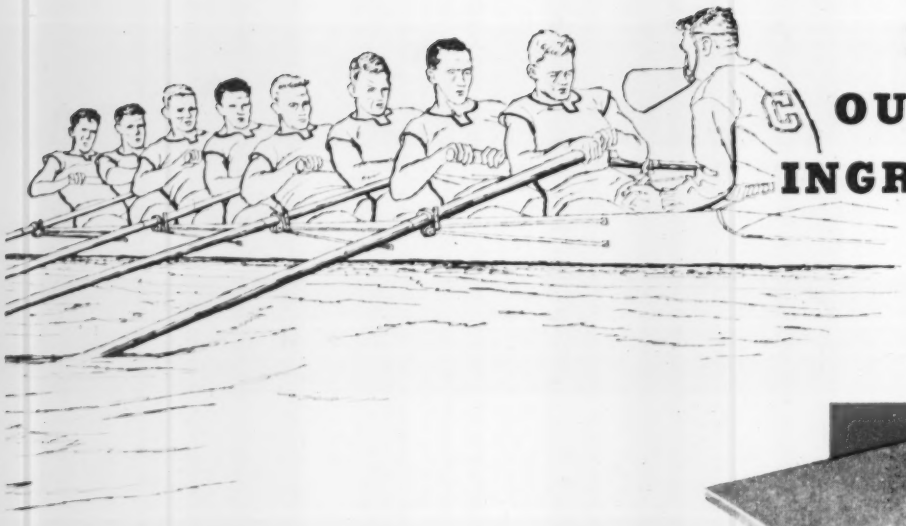

When you place an order for alloy steel plates with Claymont you get the benefit of close-knit, coordinated teamwork that assures painstaking supervision on every order, large or small.

Right down the line, starting with our front office, your order gets personalized attention from our engineers, metallurgists, laboratory analysts, and skilled workers who make your steel and roll your plates.

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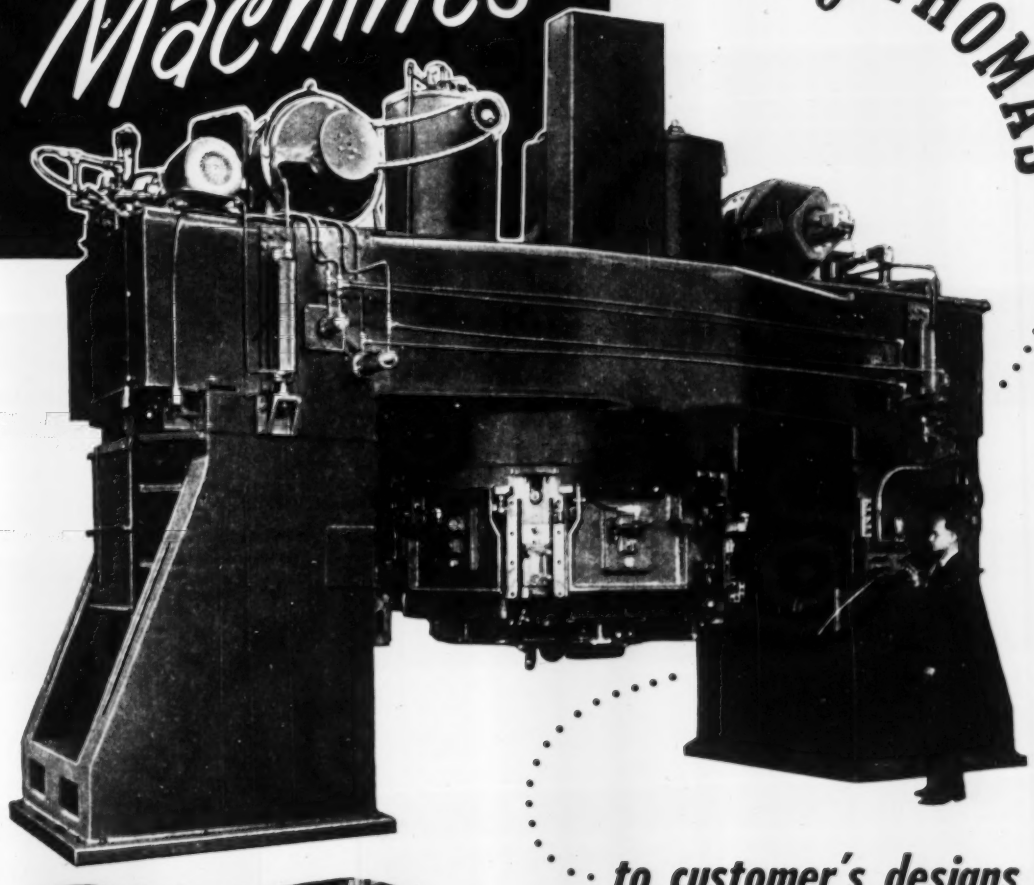
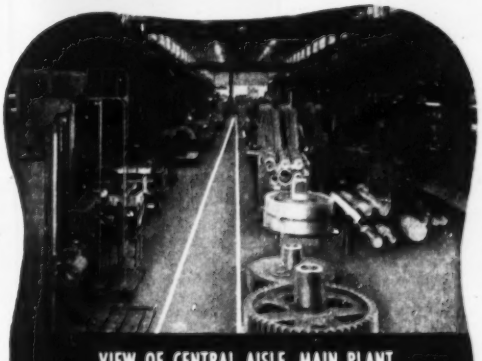


. . . to customer's designs and specifications

The six-footer at the controls in this picture shows the size of this special Thomas-built machine. It a is typical example of how Thomas can build special machines to customer's designs and specifications.

If you are in the market for special machinery or parts, call on the experienced Thomas organization.



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Thomas has the equipment and specialized technical experience to help in building any special machinery you may need.

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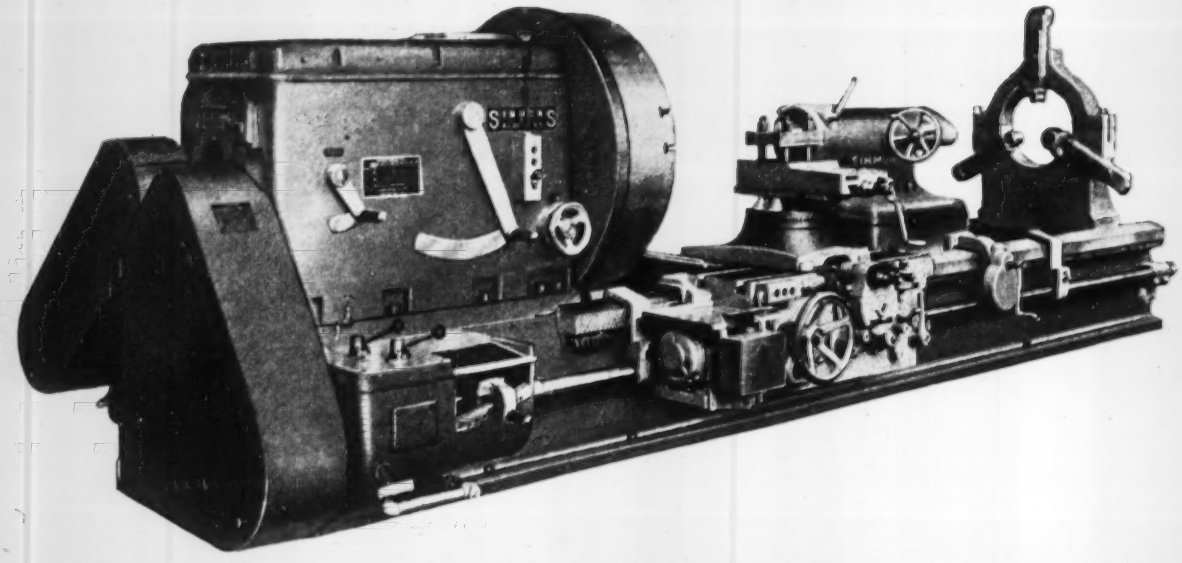

EXTRA-HEAVY ENGINE LATHES

IN 48—54—60" SWING

MORE POWER + MORE RIGIDITY

Here's the strength and power you need to push carbide tools through a full range of speeds and feeds

Want proof that this new engine lathe can produce your heavy facing, turning and threading work in a hurry? Just look at these new features:

Main drive motors now available in 30, 40, 50 or 60 HP. The wider bed now has a strength-giving continuous flange along its underside. Complete new gear box provides a range of threads from $\frac{1}{2}$ to 56 per inch. Lead screw is now $3\frac{1}{2}$" in diameter; tailstock spindle has been increased to 7" diameter. Anti-friction bearings throughout.

Can be modified for your special needs

These standard lathes can be readily adapted to your particular production plans. Our engineers will work with yours to bring it about quickly and economically.

The next step? Write, wire or phone for more details. It's your *first* step towards increased output or heavy turning, facing or threading work.

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Simmons Machine Tool Corporation

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Philadelphia Office: Phone Victor 8-3133 • Pittsburgh Office: Phone PEnhurst 1-3700

Specifications for Simmons Extra Heavy 48" Engine Lathe

RANGE Swing over bed ways: 51"; over carriage bridge: 36"
Distance between centers, 20 ft. bed: 10'

SPEED Range with variable voltage drive: RPM 1 to 144; through face plate: RPM 1 to 44
With direct current: RPM 3 to 144; through face plate: RPM 3 to 44

HEADSTOCK Hole through spindle, dia. 4"; taper of centers, Morse: No. 7
Diameter of face plate: 48"
Internal gear, tooth face: 5¾"
Headstock bearing on bed: 56"
Spindle bearing, dia. front: 11¼"; diameter rear: 8"

BED Bed's width across top of ways: 46½"
Depth of bed: 25¾"
Carriage length on bed: 60"
Width of carriage bridge: 20"
Length of cross slide bearing: 29"

FEEDS Feeds and threads: 56; range of feeds, normal: .0045" to .504"; optional: .009" to 1"
Lead screw dia.: 3½"; range of threads: ½ to 56
Lead screw, double thread: 1" lead

TAILSTOCK Tailstock spindle dia.: 7"; length: 36"; travel: 20"
Tailstock length on bed: 32"

MOTORS Main Drive HP: 30, 40, 50 or 60
Carriage traverse: 3 HP, RPM 1200
Headstock lubrication: ½ HP, RPM 1800

WEIGHT Weight of lathe 20' bed: 44,000 lbs.
Each additional 5' length: 4,500 lbs.
Cubic contents 20' bed: 1,300 cf

Also available in 54" and 60" lathes. All can be adapted for your special purposes.

Life Saver for Small Fry

*Another example of how Carpenter *Application Engineering Service is working for industry*

You know how youngsters are on a trip—they love to be near the window to make sure they see everything whizzing by. But that can be dangerous . . . a door can fly open, a tragedy can strike. That's why this safety door lock was invented. Quickly attached, it keeps children in . . . enables them to enjoy the trip, safe and secure. To open the door, the driver simply pulls a release knob. But the production problem wasn't as simple as that.

The material for the lock had to be economical to fabricate, had to provide high strength, corrosion resistance and a bright finish. Cold rolled steel, chrome plated, was tried but it just couldn't make the grade.

Then Carpenter was called in and Application Engineering Service went to work. Results: They used Stainless No. 6 (Type 430), a bright, high-strength, easy-working Stainless produced by Carpenter for just such jobs. No. 6 met all the requirements . . . and made the lock a real sales winner.

Here is another example of how Carpenter A.E.S. is working with industry to unearth new ways to make products more functional, more salesworthy, more economical to produce. You can count on this Carpenter service to help bring these advantages to your plant, too. It goes to work as soon as you get in touch with your Carpenter Mill-Branch Warehouse or Distributor. THE CARPENTER STEEL CO., 139 W. Bern St., Reading, Pa.

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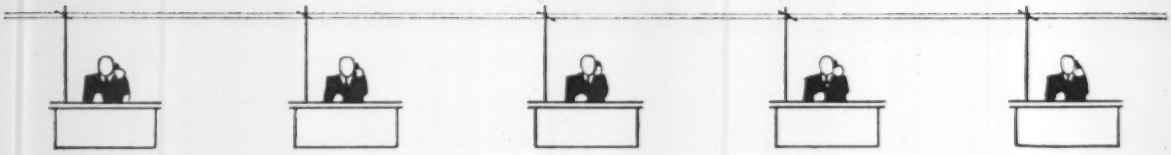
Tool, Alloy and Stainless Steels

Pioneering in Improved Tool, Alloy and Stainless Steels Through Continuing Research



Checking Coast to Coast for Your Steel Requirements

Business executives and buyers, faced with the problem of getting steel from stock under today's spotty supply situation, are finding Ryerson a helpful source.

True, our stocks are still unbalanced from a size standpoint—a condition which, we believe, prevails throughout the industry. But the Ryerson plant near you does have a fairly good tonnage on hand and it does offer you a special service that's often helpful.

As part of the world's largest steel distributing organization, your local plant can call on the resources of fourteen other Ryerson plants, each an independent operating unit but all interconnected and ready to cooperate.

Thus, if the steel you must have, or a practical alternate for it, is not on hand locally, there is still the chance that your requirement may be met from the stocks of another Ryerson plant. We are always glad to check them all when necessary. And remember—Ryerson has always been notable for prompt, reliable delivery. When we have the steel, we get it to you quickly.

So multiply your steel buying efforts and make one call do the work of many. Contact your nearby Ryerson plant for all your steel needs. Our ability to help may surprise you.

PRINCIPAL PRODUCTS IN STOCK

CARBON STEEL BARS—Hot rolled and cold finished
STRUCTURALS—Channels, angles, beams, etc.
PLATES—Many types including Inland 4-Way Safety Plate
SHEETS—Hot and cold rolled, many types and coatings
TUBING—Seamless and welded, mechanical and boiler tubes
ALLOYS—Hot rolled, cold finished, heat treated—and tool steel
STAINLESS—Allegheny bars, plates, sheets, tubes, etc.
REINFORCING STEEL—Bars and accessories, wire mesh, etc.
BABBITT METAL—Lead base, five types
RYERTEX—Plastic bearing material
MACHINERY & TOOLS—For metal fabrication

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STEEL

The Metalworking Outlook

February 2, 1953

More Steel

Steel supplies are improving steadily. Latest proof is the second-quarter allocations for consumer durable goods, except autos, radios and television sets. For the more essential hard goods, allotments for the second quarter are the same as for the first. For less essential items, the dole goes up 60 to 65 per cent from the first to the second periods. Second-quarter copper and aluminum allocations are about the same as the first, but prospects are good for supplemental tickets later. For hard goods will go some 892,000 tons of carbon steel, 43.7 million pounds of copper and copper-base alloy brass mill products and 72 million pounds of aluminum.

A New Stainless?

NPA is strongly urging stainless producers to turn out a new stainless steel, using chromium and manganese, with a low nickel content. Industry men are reluctant to do so, but they may have to unless nickel supplies improve more rapidly than they have been.

Special Deal on Foreign Investments

Look for the 83rd Congress to permit special tax treatment to those Americans who invest domestic money in industry abroad. The legislators want to cut foreign aid and believe that increased private investment in foreign business will offset the drop in federal help. Congressmen will rely heavily on the recommendations for a new private investment policy by August Maffrey, a vice president of Irving Trust Co. and adviser to Mutual Security Administration.

The Trend Reverses

Small business is getting more government contracts. The dollar value of orders awarded to small business in the first quarter of fiscal 1953 aggregated 24.2 per cent, the highest quarterly figure since July, 1950. It also reverses the downward trend in small-business awards which slid to 15.9 per cent during January-June, 1952.

Facts of Financing

Small business' difficulties in borrowing money are further accentuated by the recent increase in bank discount rates. Nor is small business able to get funds more easily on the securities market, claims the House Small Business Committee. In 1952 corporations raised $7 billion through new security issues, compared to $6.4 billion in 1951. The overwhelming bulk of that was for larger companies. The committee concludes: "Small firms need to retain more of their earnings than is possible under existing tax laws."

Preview on Demands

Demands by the CIO's electrical workers are typical of what most unions will ask in 1953: More pay, productivity increases, a new pension system, social benefits and the union shop (if it's not already in your contract). What's unique about the IUE demands is that they were made public far in advance of contract reopening. The Gen-

Production Engineering News p. 99 The Market Outlook—p. 167

eral Electric Co. contract provides for reopening on wages only Mar. 15. The Westinghouse Electric Corp. contract can be reopened on wages in April.

The Forgotten Man

The talented executive is today's forgotten man. The $25,000-a-year official has only $9361 left in real 1939 dollars after he's put through the wringer of high taxes and inflation. In 1939 he had $22,000 left. Today he has to earn $100,000 to have that much real buying power. Unless the executive who enjoyed a $25,000 salary in 1939 has been raised to $100,000, he has lost ground. So say William J. Casey and J. K. Lasser in "Executive Pay Plans," a 160-page study published by Business Reports Inc.

Veterans: More Voice in Washington

The veterans' voice is going to be felt more and more in Washington from now on. And industry should take that influence into account in any legislative proposals it has. There are now 19.7 million men and women with military service in the nation's population. Of the 3000 bills thus far introduced in the 83rd Congress, more deal with veterans' affairs than any other subject.

Straws in the Wind

Material needs for some electric power expansion will be placed on the same footing as direct military and AEC programs through a new "E" rating of special priorities now being worked out by NPA . . . Capital investment in atomic energy will be about $7.5 billion when presently appropriated construction is completed, five times what it was six years ago . . . Five major steel companies and three subsidiaries, said to do 75 per cent of the domestic steel drum business, are charged by the Federal Trade Commission with setting "standards" for pricing purposes in production of steel drums and with rigging sales prices . . . Nonfarm employment rose to an all-time high of 48.8 million in mid-December, 1952; up 1.2 million from a year earlier with two-thirds of the increase reported in manufacturing industries.

What Industry Is Doing

What you can look for from Washington as the Republicans finish with the preliminaries and get down to the business of making legislation is capsulized on p. 71 . . . Checklist on legislation which has been introduced in the 83rd Congress (pp. 72-73) . . . A DPA survey reveals the partial answer to the question of whether the U.S. has enough steel capacity (p. 74) . . . Glut of orders from the automotive, farm implement and appliance industries puts the pressure on spring manufacturers (p. 75) . . . Learning to read faster is a "must" in this wordy age (p. 81) . . . Railroads expect to spend about $1.4 billion on capital equipment this year (p. 82).

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SHIMS AND SPACERS

At our Chicago or Cleveland plants we make washers, shims and spacers:

—from 3/16" to 14" diameters;
—from .002" to 1" thick;
—from all available metals;
—in round, square, oval, crimped, and irregular shapes;
—some that are hardened and ground to precision standards;
—others with spring tension;
—for every assembly requirement.

That's why "UNITED" is a good source.

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SCREWS · NUTS · WASHERS
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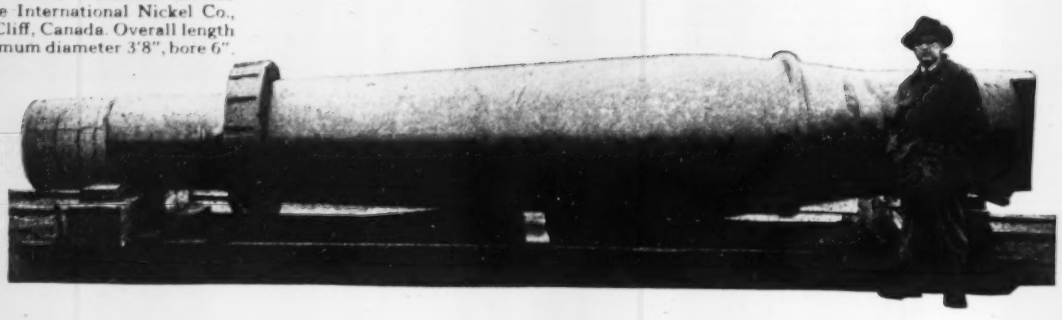
STAMPINGS

United Screw and Bolt Corporation

Chicago 8 Cleveland 2 New York 7

GIANT NICKEL STEEL SHAFT... installed as a replacement on a 54" crusher, to assure maximum service life for The International Nickel Co., at Copper Cliff, Canada. Overall length 21'6", maximum diameter 3'8", bore 6".



How Nickel Helps a Crusher

PUT THE SQUEEZE ON COSTS

Many forgings are so large that only part of the mass can be worked under the press before the steel has to be reheated. These large sections of steel, typified by this crusher shaft, so limit the cooling rate as to make liquid quenching ineffective.

Consequently, improved strength, hardness and other properties that prolong life of large forgings are much more dependent upon wise selection of alloy content than is the case with small forgings.

Because of these facts, the large crusher shaft shown above was forged from a 160,000-pound ingot of 2¾ per cent nickel steel... produced, rough-turned and heat-treated by the Bethlehem Steel Company, and finish-machined by the Traylor Engineering Company of Allentown, Pa.

After normalizing and tempering, two tests on longitudinal specimens, taken from a prolongation at mid-radius, averaged as follows:

Tensile Strength	80,000 p.s.i.
Yield Strength	51,000 p.s.i.
Elong. in 2"	28.0%
Red. of Area	58.3%

The strengthening effect of nickel on ferrite is independent of carbon content or heat treatment of the steel, and its effectiveness in reducing the rate and temperature of the upper transformation, induces better response to the necessarily milder heat treatments used.

Nickel alloy steels may help you obtain peak performance from vital parts of *your* products or equipment. Send us the details of your problems for our suggestions. Write us now.

At present, most of the nickel produced is being diverted to defense. Through application to the appropriate authorities, nickel is obtainable for the production of engineering alloy steels for many end uses in defense and defense supporting industries.

EMBLEM OF INCO SERVICE

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y

Deflating an Obsession

A problem with which the new administration must cope sooner or later is that of the encroachment of the federal government upon activities that really belong to the states or other regional governments or to private business enterprises. During the last 20 years the new dealers and fair dealers—usually under the pretense that an alarming crisis justified the act—have transferred to Washington jurisdiction hundreds of rights, authorities, taxing privileges, properties and sundry prerogatives and activities which do not belong to the federal government by even the widest stretch of the imagination.

For instance, consider the Tennessee Valley Authority. Originally Franklin D. Roosevelt promoted it as a sound flood control project. Incidentally, he suggested that it would provide a measuring stick by which it would be possible to determine whether or not the rates charged by privately owned public utilities were "excessive." Throughout the years, TVA has been developed far beyond its original purpose. Once limited to hydroelectric power, it now is expanding its steam power facilities in direct competition with private enterprise. Much of the TVA activity could be transferred to privately owned utilities with great benefit to everybody.

In petty and petulant mood, former President Truman turned over the tidelands to the Navy. He did so in the naive belief that custodianship of something by the federal government is more in the public interest than custodianship of it by its rightful owner, whether it be a state or other local subdivision. The obsession of Roosevelt and Truman that everything that is worthwhile doing should gravitate to Washington officialdom was a ghastly mistake.

It can be corrected by a careful, painstaking study of functions now performed by the federal government and determining which should be returned to their rightful jurisdictions. In the process, many things now done clumsily by Washington can be shifted to local governments or to private enterprise, where they will be done more efficiently and in many cases under circumstances that will yield a substantial tax revenue to the federal government. Perhaps today's State of the Union message of the new President will touch upon this important problem.

E. L. Shaner

EDITOR-IN-CHIEF

ICC DUE FOR OVERHAUL: On the whole, American railroads are doing a remarkable job. In recent years, particularly, they have been alert to opportunities for improving service. Through heavy purchases of equipment, they have increased operating efficiency tremendously. In 1953 they expect to invest about $1.4 billion in capital equipment (p. 82).

which represents a slight increase over the comparable outlay in 1952.

Yet in spite of their efficiency, their expenditures for better equipment, and a 6.8 per cent increase in freight rates, Class I railroads in 1952 had a net operating income equivalent to a return of only 4 per cent on net property investment. Also, while the short-term outlook for the roads is good, the long-term prospects are clouded by limitations resulting from low profits and by oppressive and unrealistic regulation by the Interstate Commerce Commission.

Competitors of the railroads such as highway truckers, inland waterways and air transport are heavily subsidized. The eastern railroads are crusading strenuously for a complete overhaul of ICC regulation so that all forms of transportation are treated fairly. This is a reform that is long overdue.

UNION COUNTS FRIENDS: According to a report of the League for Political Education of the American Federation of Labor (p. 78), 160 members of the present House of Representatives are friendly to "organized labor," 239 unfriendly and 36 doubtful. In the previous House the score was 181, 222 and 32. In today's Senate 38 senators are rated friendly, 57 unfriendly and one doubtful, compared with 40 friendly and 56 unfriendly in the last Senate.

According to these figures, the league believes the labor movement has fewer friends among lawmakers in this Congress than in the previous one. It would be interesting to know on what basis the league determines friends and enemies. Is a "friend" one who accedes to everything that a Murray, Green, Reuther or Meany demands? Or, is he one who votes for the things that are best for union or nonunion employees in the long run? There is an important difference.

A HOUSECLEANING JOB: One wonders whether the new regime in Washington can retrieve anything constructive out of the mess that the Federal Trade Commission is in. FTC has an almost perfect record for the double cross. Some years ago, Harold Ickes requested the oil companies to do certain things to help his Interior department. They co-operated splendidly, but when it was all over, the Department of Justice entered suit against them. In the famous Madison case, the federal judge ruled that Ickes' testimony could not be entered and the defendants were declared guilty.

Today we have a repetition of the Washington double cross. Five oil companies are on the pan for a co-operative venture suggested by one arm of the government. But another department first instituted criminal action and now pleads for civil action. The whole mess is embarrassing to our negotiations in the Middle-East and it points to the need of a thorough housecleaning of the cockeyed FTC.

QUESTIONS SINCERITY: From his office in Kansas City, ex-President Truman confided to a newspaper reporter that he doubts whether the Soviets have perfected the atomic bomb or whether they have the "know how" to make it work. It is a curious statement when arrayed against his official announcements as President of the United States that the enemy had the bomb and was making progress in atomic energy developments.

What can one deduce from this startling statement? Are we to believe that our President was doubtful of the Kremlin's progress but that he used his prestige as President to scare Congress and the public into authorizing more for defense against the potential aggressor than was really justified? His reversal of opinion is confounding.

AN UNNECESSARY LOSS: Now that the annual financial reports of many corporations are becoming available and numerous statistical records for 1952 are being completed, it is noticeable that most of these statements make reference to an unfortunate occurrence last year. No matter how good or bad was the record for 1952, the report usually says that the showing "would have been much better had it not been for the prolonged steel strike." Beyond the publicized distress caused by the strike was the loss in pay suffered by every person who was kept away from his job.

The irony of this is that everything won in the final settlement could have been gained without resort to the strike. Also ironic is the fact that a keen sufferer was Uncle Sam, whose loss in tax revenue was substantial.

Automatic Voting Machine Corporation casts its vote for **ES COMPRESSORS**

Voters in 29 different states and the Territory of Hawaii indicated their choice in the November elections by turning levers on machines made by the Automatic Voting Machine Corp. of Jamestown, N. Y. This company and its predecessors have been engaged in the development and production of automatic voting equipment since 1898.

When it came to choosing a compressor to aid in its manufacturing processes back in 1934, this leader in its field chose the leader in the compressor field . . . Ingersoll-Rand's ES compressor. Satisfaction was proven when the company chose a duplicate ES compressor in 1947 to take care of its increasing air power needs. Both machines have been operating since that time, supplying compressed air to punch and drill presses and a variety of I-R air tools.

The ES compressor is designed to stand up under heavy-duty, 24 hour continuous full-load service over many years. Efficiency stays high; maintenance stays low. Sizes 5 to 125 hp with pressures from 5 to 150 psi.

The ES is of the double-acting crosshead type and is equipped with highly efficient, durable and quiet-operating Ingersoll-Rand Channel Valves.

Whatever your compressed air requirements, Ingersoll-Rand has a size and type compressor that will best serve your needs. A call to your nearest I-R branch will bring complete details.

Ingersoll-Rand

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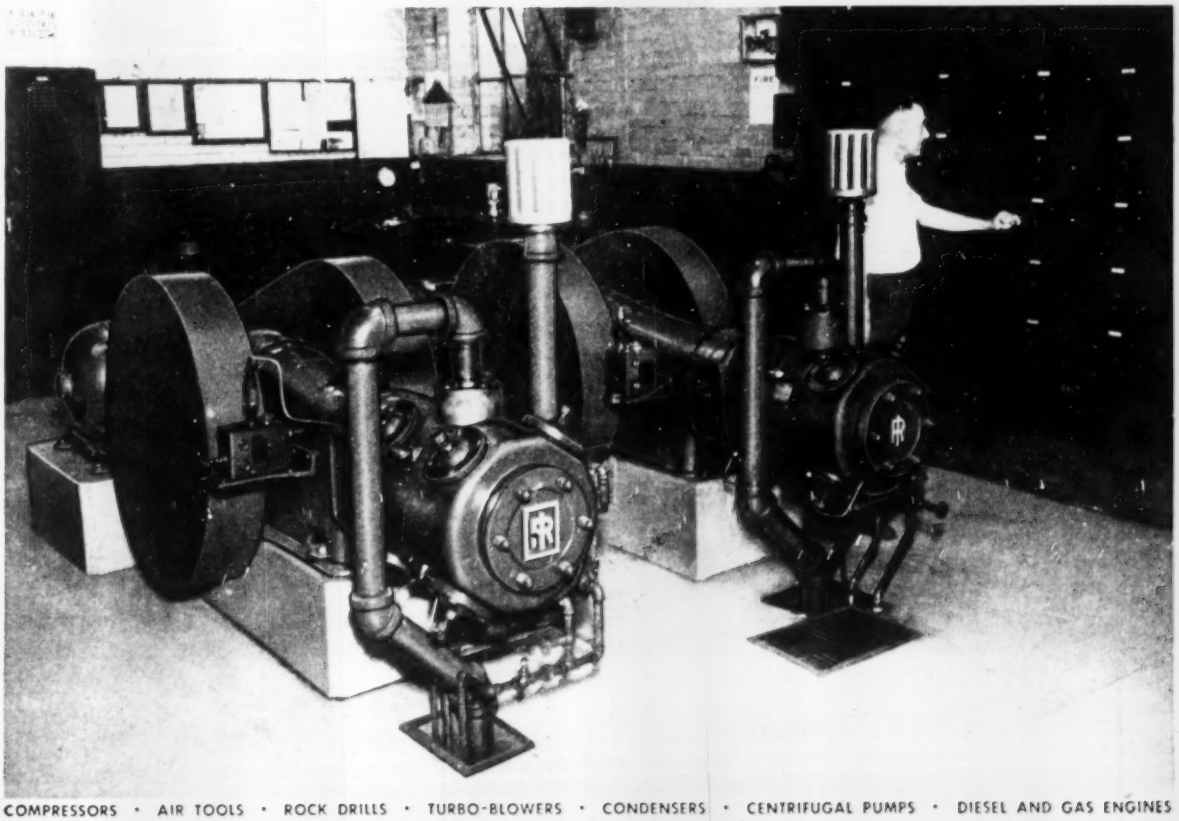

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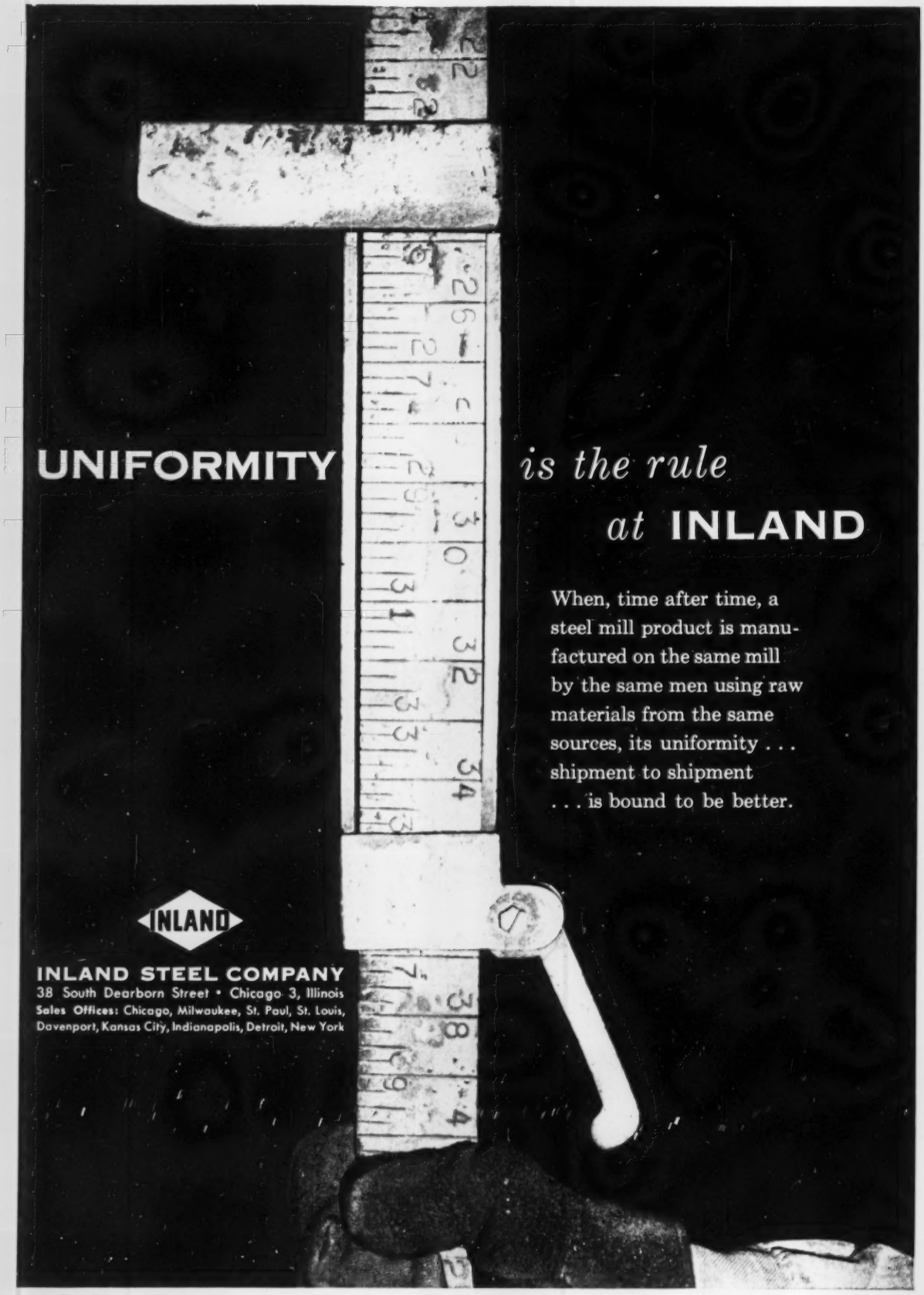
UNIFORMITY
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When, time after time, a steel mill product is manufactured on the same mill by the same men using raw materials from the same sources, its uniformity . . . shipment to shipment . . . is bound to be better.
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What You Can Expect from Congress in 1953

Controls
Mobilization
Budget
Foreign Aid
Taxes
Labor

PRESIDENT EISENHOWER'S State of the Union address today is the real starting gun for 1953's legislative race.

Time thus far in the month-old session has been devoted to getting organized and waiting for word from the White House on a specific legislative program. While more than 3000 bills have already been introduced (see pp. 72 and 73 for those significant for industry), proposals are still scarce in several of the six legislative areas that will affect business the most in 1953.

Controls—Congress' problem on controls is complicated by disagreement among defense agencies on what should be done. NPA now thinks CMP for all but the military and a few related programs should be dropped Apr. 1. DPA believes CMP should be kept until June 30.

Look for Congress to allow the President to modify CMP if he wishes to by Apr. 1. A new defense act will probably provide for a "Little CMP" and continued controls on particularly tight materials such as nickel. The new law can be expected to have an in-event-of-total-war clause that would reinstate all curbs. Wage and price restrictions will be allowed to end completely when the authority for them expires Apr. 30. Congress will permit the President to kill them sooner if he wishes.

Mobilization—The 1953 mobilization legislation directly affecting industry will relate chiefly to defense buying and expansion of production facilities where there are still gaps. Uncle Sam is now spending for the military at the rate of $50 billion a year, and that rate will continue or even increase in 1953. The budget request by Mr. Truman for $46.3 billion in fiscal 1954 for defense won't be pared much to affect 1953 business. Congress will investigate ways to save on defense spending, but results won't come before 1954.

To fill in the gaps in the mobilization base, the legislators will authorize federal spending for machine tools, a continuation of the present fast amortization, a continuation of a modified version of the present defense loan services and specific help to be improvised where and when needed. Particularly close scrutiny will be given adequacy of steel capacity (p. 74).

The Budget—Republicans will cut the Truman fiscal 1954 budget from $78.6 billion to $70 billion by concentrating on the $54.2 billion allotted for defense and foreign aid. A further stretch-out in aircraft procurement could trim $1 billion. The $1 billion earmarked for stockpiling will be cut. Research and development of weapons, to the tune of $1.6 billion in the budget, will be whittled by $200 million or more.

But the big field for cuts will come in the $7.9 billion for aid abroad. Cheaper assistance will be demanded by Congress. Pointing one way that can be done could be an experiment in U. S. industrial help to Latin America (p. 73).

Foreign Aid—Congress on foreign aid matters will listen to John Foster Dulles and Harold Stassen. They're already off on a trip to Europe. The object: To learn whether Great Britain, France and West Germany will play ball together. If not, aid will be cut.

You can expect Congress also to encourage investment abroad by giving investors a better tax deal.

Taxes—The melancholy fact on taxes is this: There won't be significant cuts this year. That's despite Rep. Daniel Reed's bill that would cut personal income taxes 11 per cent by June 30. Republican leadership is against the move.

It's also against another Reed proposal: A constitutional amendment to limit federal levies on income to 25 per cent of an individual's or corporation's earnings.

Labor—The 1953 legislation will be mild. Senator Taft will lead on the matter, and his proposals thus far are slight. Only a couple of long strikes would stiffen Congress. And even if we have bad strikes in coming months, don't count on legislation to restrict union's monopoly power.

On the other hand, don't expect to be bothered so much by congressional investigations either. The Celler committee on monopolies is dead, and that's one indication industry can expect a fair shake from the 83rd Congress.

3000 Bills Pile Up in Congress with Still More Coming:

Republicans go slow pending recommendations by Eisenhower; Democrats not so wary

FROM THE 3000-odd bills introduced during the first three weeks of the 83rd Congress, STEEL has listed in the accompanying table those of special interest to the metals industries.

The great bulk of the legislative proposals dropped in the hopper is not of direct concern to business.

Long History—Some of the bills now pending as the proposal to recognize and define the legality of freight absorption and the meeting of lower prices in competition are based on previous study and may be enacted in their present form. Many others still are to be formulated, mainly as a result of recommendations by the Eisenhower administration and conclusions reached as the result of committee hearings. Subjects coming in this category are the excess profits tax, taxes generally, economic controls, labor-management relations, foreign aid, the Emergency Powers Continuation Act, import tariffs, renegotiation, and ways and means of fulfilling mobilization goals.

The majority of bills introduced at the start of the session came from Democrats. Republicans showed a disposition to hold their hands pending formulation of party strategy.

Where duplicate or parallel bills have been introduced, the accompanying list mentions only the first.

Cutting Paper Work

A revision of NPA Order M-41 will free machine tool and other production equipment builders from the necessity of filing Form NPAF-62 (Manufacturers' Order Board) and Form NPAF-62A (Summary and Analysis Sheet) each month. Instead they will file these forms for the month of January, 1953, after which they need make reports only to cover metalworking machines listed on Exhibit D to Order M-41. The forms covering Exhibit D machines will be filed with the Metalworking Equipment Division on a monthly basis.

S 655-659, Taft, R., O.: To provide in five bills for 16 modifications of the Taft-Hartley Law, the most important being a reorganization and enlargement of NLRB from five to seven members and the requirement that employers as well as union officials sign non-Communist affidavits.

S 540 McCarran, D., Nev., and HR 635 Walter, D., Pa., and Teague, D., Tex.: To establish as a complete defense against price discrimination charges, price differentials made in good faith to meet the equally low price of a competitor.

S 298 Frear, D., Del.: To allow taxpayers to self-determine depreciation deductions for capital equipment in income tax returns.

S Res 25 Capehart, R., Ind., and Maybank, D., S. C.: To make a study of means of increasing our foreign trade.

S Res 14 McCarran, D., Nev.: To make a study of antitrust laws and their administration.

H Res 65 Pelley, R., Wash.: To ascertain reasons for periodical interruptions of shipping through the port of Seattle.

HR 1375 Bow, R., O.: To pay certain unrecovered costs incurred by producers of strategic and critical minerals and metals during World War II.

S 160 Murray, D., Mont.: To investigate the feasibility of electric power from wind-driven generators.

S 6 McCarran, D., Nev.: To promote production of synthetic liquid fuels.

HR 1601 Rains, D., Ala.: To intensify experiments in underground gasification of coal, lignite, oil shale, etc.

S 87 Cordon, R., Ore.: To generate more power in the Columbia River basin.

S J Res 16 Ferguson, R., Mich.: To create a Great Lakes Water Level Commission.

S 283 Kilgore, D., W. Va.: To provide for a transcontinental super highway with alternate sections.

H J Res 104 Dondero, R., Mich.: To create a St. Lawrence Seaway Development Corp.

HR 568 Reed, R., N. Y.: To continue through June 30, 1954, the suspension of copper import taxes.

HR 604 Simpson, R., Pa.: To amend section 117 of the Internal Revenue Code re. iron ore royalties.

H Res 13 Bolling, D., Mo.: To create a Select Committee on Problems of the Aging.

H Res 40 Smith, R., Wis.: To investigate U. S. participation in the International Materials Conference.

HR 369 Auchincloss, R., N. J.: To protect rights of the public in labor disputes.

HR 437 Fisher, D., Tex., and HR 639 Wilson, D., Tex.: To put labor unions under the antitrust laws.

HR 392 Celler, D., N. Y.: To establish an Inventions Awards Board in the Department of Defense.

HR 401 Celler, D., N. Y.: To provide for adjustments of royalties for use of inventions for benefit of the U. S.

HR 103 Burdick, R., N. Dak.: To outlaw acceptance of favors from influence peddlers.

H Res 15 Coudert, R., N. Y.: To create a Select Committee to Inquire into Commercial and Proprietary Activities of the Government of the U. S.

HR 125 Engle, D., Calif., and HR 442 Hale, R., Me.: To restore the gold standard and legalize the right of citizens to own and sell gold.

HR 447 Hillings, R., Calif.: To establish a uniform system of bankruptcy throughout the U. S.

H J Res 72 Ray, R., N. Y.: To provide for research into causes, hazards and effects of air pollution, and recovery of critical materials from atmospheric contaminants.

HR 403 Celler, D., N. Y.: To allow temporary free imports of aluminum.

These Concern Metalworking

HR 63 Keogh, D., N. Y.: To allow temporary duty-free importation of petroleum containers.

HR 321 McDonough, R. Calif.: To compensate employers for withholding income tax from wages of employees.

HR 166 Mills, D. Ark.: To establish a Tax Settlement Board.

HR 1579 Fulton, R., Pa.: To prohibit discrimination in employment because of age.

H J Res 123 Gwinn, R., N. Y.: To amend the Constitution to prohibit the U. S. government from engaging in business with its citizens.

S 252 George, D., Ga.: To provide jury trials for tax recovery claims.

S 24 McCarran, D., Nev.: To permit judicial review of decisions of government contracting officers involving questions of fact under government contracts.

HR 510 Lane, D., Mass.: To permit the award of contracts to firms in labor surplus areas at 5 per cent above lowest bid.

HR 1020 Frazier, D., Tenn.: To illegalize use of the national flag in advertising.

HR 534 O'Hara, R., Minn.: To make standard time the measure for all purposes.

HR 1014 Fine, D., N. Y.: To provide equal pay for women.

HR 1218 Bartlett, D., Alaska: To empower the Court of Claims to pass on claims for basic and overtime compensation.

HR 1028 Hand, R., N. J.: To make espionage and advocacy of overthrow of the government a capital offense at all times.

HR 992 Brown, R. O.: To re-establish a Commission on Organization of the Executive Branch of the government.

HR 1003 Church, R., Ill.: To create a commission to study administration of overseas activities of the government.

HR 995 Budge, R., Idaho: To suspend price and wage controls.

HR 606 Simpson, R., Pa.: To encourage prevention of water pollution by allowing fast amortization on money spent for industrial waste treatment works.

H J Res 98 Machrowicz, D., Mich.: To approve U. S.-Canada St. Lawrence seaway agreement.

HR 1230 Cole, R., N. Y.: To raise income tax exemptions from $600 to $1000.

HR 1018 Ford, R., Mich.: To permit tax deduction of losses and expenses caused by abnormally high water levels in the Great Lakes.

S J. Res 30 Byrd, D., Va.: To give the President the power, by means of a constitutional amendment, to veto individual sections of appropriations measures.

HR 604 Simpson, R., Pa.: To treat iron ore royalties at the capital gains rate of 26 per cent instead of considering them, as is done now, as straight income.

HR 1519 Bender, R., O.: To dissolve the RFC.

S 481 Young, R., N. Dak. and Russell, D. Ga.; HR 1829 Lovre, R., S. Dak.: To amend Agricultural Act of 1949 to extend for three additional years the requirement that prices for basic agricultural commodities be supported at 90 per cent of parity.

S Res 38 Gillette, D., Iowa, and other senators: To create a Senate Committee on Consumer Interests.

HR 1926 Hinshaw, R., Calif.: To provide for federal participation in design development and service testing of jet transport aircraft.

S 574 Taft, R., O.; HR 1979 Brown, R., O.: To extend to Oct. 1, 1952 the President's authority to submit plans for reorganization of executive agencies.

S 589 Wiley, R., Wis., and 16 other senators: To authorize participation by the U. S. in construction and operation of the St. Lawrence Seaway.

S 106 Ferguson, R., Mich.: To determine whether some federal activities can be better performed by states or private industries.

S 595 Young, R., N. Dak., and Eastland, D., Miss.: To increase the federal farm price supports for basic crops from 90 to 95 per cent of parity.

Replacing Money Aid

A new plan to help Latin America is designed to lessen cost of assistance

ACTION on the "trade instead of aid" theory of foreign assistance comes with the forming of new "Industrial Productivity Servicios" in Latin America. Two are in the organization stage one in Brazil, the other in Chile with others coming for El Salvador and Colombia.

Goal of these "servicios" is vitalization and expansion of existing industries, cost reduction and increased output through installation of improved automatic and semi-automatic machinery, materials handling equipment, etc. Since they'll be staffed by American engineers and technicians, on invitation of the host countries, the effect should be a boost for American-made industrial equipment.

Point of Fact—Actually the "servicios" are filling an existing need in Latin American countries which want to industrialize further but do not have the know-how to do it. Costly boners in mechanization have shaken the Latins' confidence but they're ready to go ahead on the basis of dependable assistance. They want to raise living standards by producing a much larger variety of manufactured goods and making them available at reduced prices. They have some capital and can borrow more from international banking organizations.

American experts are being recruited for the "servicios" and include specialists to fit the needs of the individual countries. The Chilean team, headed by Richard Goodrich in Santiago, will include specialists in the foundry, sheet metalworking and needle trades, food processing and wood products fields. The Brazilian team, led by D'Alton Myers in Rio de Janeiro, will include a textile engineer, a foundryman, a general metalworking man, an electrical products man, a methods engineering specialist and a materials handling specialist.

Besides the Brazilian and Chilean "servicios," two more are about to be set up, in El Salvador and Colombia. A fifth, for Uruguay, is being discussed.

Enough Steel in Case of War?

The first part of a DPA survey on the subject makes no clear-cut answer. But initial figures indicate the final report will be generally favorable

IS FINISHED steel capacity adequate for full mobilization?

The Defense Production Administration isn't certain it is despite the recent tremendous expansion of facilities.

Optimism — Results are encouraging on the first phase of a three-pronged study to evaluate potential capacity for producing eight critical finished products essential to full mobilization. But until the remaining two parts of the study are completed, adequacy of the expanded capacity to meet possible needs cannot be fully evaluated, it is said.

The eight products covered in the survey (see the table) are: Heavy standard rails; hot-rolled bars, including tube rounds 1½-inches to 9½-inches in diameter; cold-finished bars 1 7/16-inches and over; heavy structurals and piling; strip mill plates, sheared plates, universal plates; and seamless pipe and tubing.

Emphasis—Report on results of the first phase, just issued, shows greatest emphasis in the post-Korea steel expansion has been on basic steelmaking capacity, and on raw materials and transportation facilities.

As of Jan. 1, 1954, the industry will have ingot capacity of 121,098,000 tons, according to the report. That will bring capacity to a level 25 per cent greater than comparable capacity on Jan. 1, 1950, and 38 per cent greater than the highest production rate achieved in World War II.

Basic Potential — Blast furnace capacity on completion of the planned expansion is expected to reach 84,905,000 net tons, or 19 per cent greater than the 71,498,000 tons capacity available on Jan. 1, 1950.

Necessity certificates had been issued for new steel facilities amounting to $4,661,077,000 as of Oct. 1, 1952. Of this amount, 72.9 per cent was for basic steel plant and raw material expansion. The balance was for facilities necessary to round out the finishing capacity needed to handle the increased volume of ingots.

Tax Angle — Rapid amortization privileges were granted for only $3,143,567,000, however, or two-thirds of the total amount covered by the certificates of necessity issued. Of the certificates issued for basic steel and raw material facilities, rapid amortization was granted for 72 per cent of the value, while of the certificates issued for finishing facilities rapid amortization was granted for only 55 per cent of the value.

Biggest Expansion—In appraising implications of the DPA report, note that in the finishing facility category, covering a quarter of all necessity certifications, the largest expenditures fall in the category of sheet, strip and black plate. Certifications in that classification amount to $714,039,000, or 15.3 per cent of the finishing facility total, of which $392,759,000 or 12.5 per cent was amortized.

Those larger expenditures for facilities to produce products ordinarily considered chiefly of a civilian-use nature have been the basis for some criticism of the expansion program. But the classification includes those facilities used to produce strip mill plates. Since that type of facility has had to operate at a higher average rate of utilization than other classes, it is natural that most expansion of finishing capacity occur there.

The steel industry historically has kept its finishing capacity substantially above that for ingots, according to the report. In addition, finishing capacity is characterized by considerable flexibility and convertibility in many products. Consequently, these facts, along with additions to and rounding out of facilities, tend to assure ability of finishing capacity.

Breakdown — This first phase study of steel capacity, started last October, sought to develop statistical data as to the maximum potential output of the eight products as result of the steel expansion program currently nearing completion. The second part of the study will involve a compilation of data on military and other requirements, while the third section will compare and evaluate the data on output potential and requirements.

PRODUCTION POTENTIAL UP ON TIGHT ITEMS

Product (all grades)	Net Shipments 1950 in net tons*	Maximum possible annual production at conclusion of expansion program†
Standard rails, heavy	1,729,000	2,649,000
HR bars including tube rounds, 1½"—9½"	5,845,000	21,538,000
(Tube rounds produced on mills capable of producing tube rounds only—included above)		(4,072,000)
Cold-finished bars 1 7/16" and over	552,000	2,307,000
Heavy structural shapes and piling	4,591,000	9,560,000
(Wide flange beams and bearing piles—included above)	(2,000,000)	(2,645,000)
Plates—strip mill	733,000	6,260,000
Plates—sheared	4,875,000	8,676,000
Plates—universal	964,000	4,460,000
Seamless pipe and tubing	3,310,000	4,939,000

*Exclude shipments to members of the industry for conversion into further finished products or for resale.

†Data are not additive, but are the total tonnage of a product that could be produced under *full operations*, assuming exclusive use of all available facilities and without regard to the availability of ingots.

Steel Earnings Slump

Strike-riddled 1952 should be followed by high-production 1953, officials believe

OPTIMISM for at least the first six months of 1953 is the keynote of several steel magnates as annual reports to stockholders are made public. More than half the companies making such reports up to press time stated that despite a slump in profits during the past year, they expect production to ride high levels at least through the second quarter, with a second half decline, if any, of only minor proportions.

The steel strike was the main cause for less profits in 1952 than in 1951, coupled with rising costs which most officials claim were not offset by increased prices of their products. The accompanying table, which shows profits for firms reporting a fiscal year approximating the calendar year, clearly shows what a bite these elements took.

	1952	1951
U. S. Steel	$144,285,522	$184,359,787
Bethlehem	90,900,771	106,531,253
Republic	44,274,053	54,291,541
Inland	23,755,218	34,398,585
Youngstown S&T	22,915,822	30,644,201
Jones & Laughlin	19,482,000	30,998,000
Wheeling	10,950,780	17,392,959
Pittsburgh	5,100,000	7,331,000
Lukens*	2,316,791	3,549,567

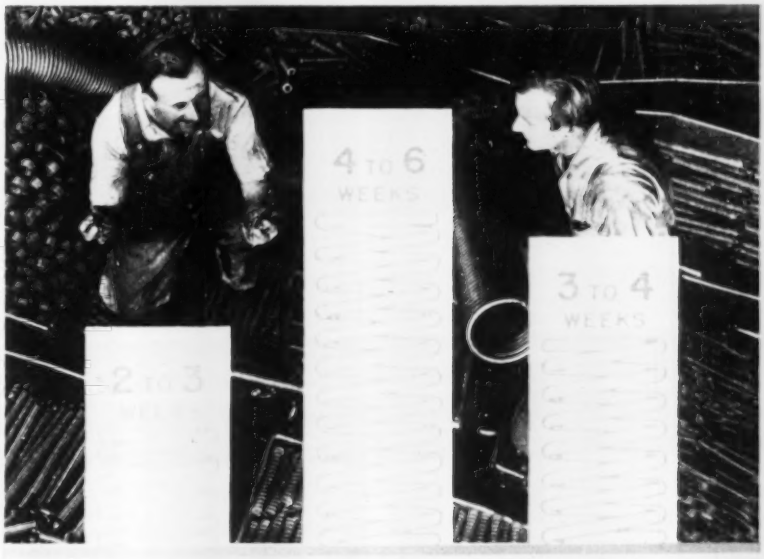
*Fiscal year ended Oct. 25, 1952.

Saving Factor—The one factor that kept income from falling off even farther was a record fourth quarter production. For instance, U. S. Steel shipped 6,626,668 net tons of steel products last quarter, the greatest tonnage shipped in any quarter of its history.

Another factor in the 1952 profit picture is the carryback of excess profits credit to 1951 and a tax reduction for that year. That was caused by the strike last summer.

Quarter Reports—In addition to the companies listed above, several issued reports for the fourth calendar quarter. Those firms have fiscal years differing from calendar year. Kaiser Steel Corp. reported earnings of $1,957,165, compared with fourth quarter, 1951, of $3,160,250; Carpenter Steel Co. reported $866,170 compared with $855,550; Colorado Fuel & Iron Corp. reported $2,026,246 compared with $1,925,307.

Average Deliveries of Precision Mechanical Springs



*Estimated by STEEL

Spring Deliveries Bounce Up

SPRING MAKERS' usual ability to supply an elastic demand is currently being stretched to the limit. That's why you may be having trouble getting faster delivery.

It's not unusual for a customer to ask spring makers to double or halve his order overnight. And the spring manufacturers are flexible enough to accommodate a great deal of this fast change.

Three-way Stretch — But the automotive trade—number one customer of the jobbing precision mechanical spring maker—farm implement producers and appliance people have all jumped orders for the first half, 1953. Automakers hope to build at least 2.8 million cars by mid-year (see Mirrors of Motordom, Jan. 5, p. 136). Appliance manufacturers are shooting for a record dollar sales and near-record unit sales year in 1953 (see Appliances, Dec. 22, 1952, p. 38). With dollar sales expected to shrink in 1953, farm machinery makers are anxious to make haying machines while the sun shines and are pressing for quick spring deliveries (see Farm Machinery, Dec. 8, 1952, p. 68).

Because of that glut of orders, the spring makers are having difficulty getting the steel they need when they need it. High carbon strip is one item they want more of; flat stainless is getting tighter, with mills quoting 90 days' delivery in many cases; Inconel and MB ground wire are tight. Alloy steel is adequate to meet requirements; music wire is, too, as is bronze.

Not Forever — While materials poses the biggest problem for spring makers, besides trying to pacify customers whom they can't completely satisfy at the moment, spring manufacturers don't believe the current shortage will last beyond mid-year. Some indicate new tooling for spring work after May is falling off. So delivery dates which jumped from an average of 2 to 3 weeks in late December to 4 to 6 weeks now should start slipping back again in the second quarter (see the chart).

Last year, precision mechanical spring makers did about $140 million in sales, down some 10 per cent from 1951, but well above 1950's $100 million. Sales this year are expected to about equal the 1952 figure. Precision mechanical springs used in a myriad of

equipment from delicate instruments to heavy machinery make up the largest segment of the complicated spring industry. Some 85 companies out of 150 do the lion's share, 90 per cent, of the dollar volume. Other firms of the industry can be roughly classed as leaf, railroad, upholstery and furniture spring producers. There's a distinct difference between the short-run specialty house and the production-run house. Each category has some firms in each type but generally the production jobs are for heavy consuming industries like automotive or appliance.

The Limit—Prices are another consideration which is limiting the bounce back of spring makers to meet the currently inflated demand. Price control has meant absorption of increased labor costs and spring manufacturers are finding that, when they can't get steel from the mills, they still can't afford to go to warehouses for all their steel needs.

Guide to Automation: Will It Pay Off?

"PROGRESSIVE MECHANIZATION," not a headlong leap into "automatic factories," is the surest, safest way for manufacturers to meet the probable tremendous increase of the public's appetite over the next ten years. That's the judgment of Arthur F. Vinson, assistant manager of manufacturing, General Electric Co., who was major speaker at the ninth annual meeting of the Cutting Tool Manufacturers Association in Detroit last Tuesday.

The increase in productivity in the period 1940-1950, Mr. Vinson said, was 21 per cent. "We believe that rate must be more than doubled and that it can be doubled by accelerating our mechanization rate."

Word of Caution — But, he advised, progress should be made slowly. The two fastest and surest ways for a company to go broke are to continue making by hand a product which a competitor makes by machine and to have too much idle machine capacity. The automatic factory, Mr. Wilson believes, "presents unusual opportunities to make or lose much money."

At GE, the approach is to raise the level of mechanization, in some cases stepping up only from use of hand tools to a simple machine, or a few steps higher to automatic controls. And each study to determine the degree of mechanization is guided by the "pay off;" a new method either pays its way or it is discarded in favor of another method that will.

Slower at that Rate—Under this system automatic factories may be a long way off. In General Electric, for example, no product it makes is automatically packaged. In fact, at one midwestern GE plant more people are required to package the product than to manufacture it.

Some of the problems standing in the path of complete mechanization are the impossibility of complete integration of operations self-contained manufacturing without need of subcontractors; specific machine tool and tooling problems such as arise when speeds of various pieces of equipment are not balanced and machine tools too fast to be fitted into an integrated line stand idle much of the time; need for elimination or automation of "batch-type" operations plating, cleaning, annealing, etc., and planning and scheduling for automatic operations.

A way to translate sales forecasts and other office calculations into information for the plant may be the largest problem of the lot. Much more data needs to be developed on machinability of commonly used materials, and finally the problem of employee relations needs to be solved before complete mechanization can be achieved.

ROBERT J. RYAN
. . . president of fabricators group

Fabricators Appraise 1953

Although prospects for heavy steel construction in 1953 appear to be at least as good as 1952 was, they hinge on the availability of plates and structurals. This was the sentiment of members of the Steel Plate Fabricators Association at their 20th annual meeting in Chicago, Jan. 22-23.

Orders on the books appear to justify the optimism, although caution was expressed that the law of supply and demand may be felt before long.

Business now in hand, fabricators explain, is firm and is sure to remain on the books. Removal of price controls is not likely to cause any stir, one member said.

Robert J. Ryan, president, Nooter Corp., St. Louis, was elevated from vice president to president of the association, to succeed J. E. O'Leary.

SELECTED DEFENSE CONTRACTS IN EXCESS OF $100,000

PRODUCT	CONTRACTOR
Tank, Automotive Spare Parts	Bendix Products Division, Bendix Aviation Corp., South Bend, Ind.
Shells, 120 mm.	Cribben & Sexton Co., Chicago
Diesel Engine Parts	General Motors Corp., Cleveland Diesel Engine Division
Boring, Drilling Machines	Giebel Inc., New York
Tank & Combat Vehicle Parts	Monroe Auto Equipment Co., Monroe, Mich.
Shells, 57 mm.	Heckethorn Mfg. & Supply Co., Littleton, Colo.
Parts for Chemical Shells, 90 mm.	Budd Co., Detroit
Rocket Assemblies	Kaywood Corp., Benton Harbor, Mich.
Projectile, Practice, 30 mm.	Harvey Machine Co., Torrance, Calif.
Telescope, with Equipment	Graflex Inc., Rochester, N. Y.
Motor Generator	Continental Electric Co. Inc., Newark, N. J.
Diesel Generator Sets	R. H. Sheppard Co. Inc., Hanover, Pa.
Bombs, Practice, Miniature	Basic Foundry Co., Huntington, W. Va.
Radio Sets	Hallicrafters Co., Chicago

CHECKLIST ON CONTROLS

Materials Orders

ALUMINUM—Amendment 1 of NPA Order M-5, issued and effective Jan. 23, 1953, relieves secondary smelters and independent fabricators of aluminum of the requirements of filing Form NPAF-167 after Jan. 15, 1953. After that date, primary producers of aluminum will file the form with NPA.

NPA Regulations

ELECTRIC LIGHT BULBS—Amendment of Jan. 23, 1953, of Appendix A of Direction 3 to NPA Regulation 2, effective Jan. 23, adds incandescent and fluorescent electric lamp bulbs to the list of commodities for which defense order (DO) ratings may not be offered or extended to obtain delivery. Orders bearing specified defense and machine tool program identification are exempted from this action.

Price Regulations

DEAD BURNED MAGNESITE—Supplementary Regulation 132 of General Ceiling Price Regulation, issued and effective Jan. 22, 1953, authorizes an interim increase of 9 per cent in current ceiling prices for producers of dead burned magnesite.

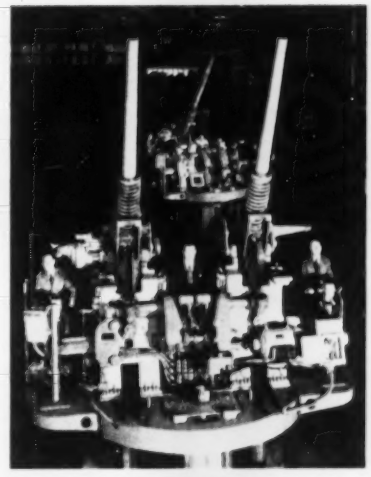
PASS THROUGH—Amendment 7 of General Overriding Regulation 35, issued Jan. 21, 1953, and effective Jan. 26, extends the provisions of Section 6 (a) and (b) relative to purchases from mill suppliers to all purchases of steel, iron, copper and aluminum from the producing mill or any reseller other than a warehouse.

ALUMINUM—Amendment 1 of Supplementary Regulation 113 of General Ceiling Price Regulation and Amendment 8 of General Overriding Regulation 35, both issued and effective Jan. 22, 1953, authorize ceiling price increases of one-half cent a pound for producers of primary aluminum pig, alloy pig and primary aluminum ingot and of 4 per cent for producers of other primary aluminum mill products.

COMMERCIAL VEHICLES — Supplementary Regulation 11 of CPR 30, issued Jan. 23, 1953, establishes a method whereby manufacturers of automotive trucks, motor coaches, truck trailers, trailer coaches, ambulances, hearses, flower cars, motorcycles and motor scooters may determine their ceiling prices for these vehicles and for any extra, special or optional equipment installed thereon. Amendment will become effective Feb. 23 or such earlier date between Jan. 23 and Feb. 23 as the manufacturer may select.

STEEL CASTINGS — Supplementary Regulation 4 of CPR 60, issued and effective Jan. 23, 1953, authorizes a 3.5 per cent increase in ceiling prices for producers of high alloy steel castings.

WATCHES, HOLLOWARE — Amendment 12 of Revision 1 of General Overriding Regulation 5, issued and effective Jan. 23, 1953, exempts from ceiling prices some higher-priced watches and clocks, practically all holloware and other miscellaneous luxury and gift consumer items.



Electronic Ack-Ack

Electronically controlled mounts for antiaircraft guns are again being made by the Firestone Tire & Rubber Co., Akron, O., which manufactured both 40mm and 90mm gun mounts during World War II. The three-inch, twin-fifty gun mounts above are being produced on a Navy contract

AUTOMOBILE MANUFACTURERS—Amendment 6 of Revision 1 of CPR 1, issued Jan. 28, 1953, and effective Jan. 31, sets forth several changes in the methods employed by manufacturers of passenger automobiles in determining ceiling prices and computing adjustments to cover the extra costs involved in using conversion steel.

GOVERNMENT PROPERTY — Revision 1 of Supplementary Regulation 72 of General Ceiling Price Regulation, issued and effective Jan. 28, 1953, suspends from price controls five additional types of sales of certain United States government property.

IRON, STEEL RESELLERS—Interpretation 2 of CPR 98, effective Jan. 28, 1953, states that a seller of iron and steel products under certain circumstances will be classified as a warehouse reseller when he rents warehouse space and has a lessor perform certain warehousing services.

RAIL, TRACK ACCESSORIES—CPR 186, issued Jan. 28, 1953, and effective Feb. 16, provides a flat ceiling price of $64 a net ton f.o.b. shipping point for relaying rail and used track accessories when sold by the railroad and $69 a net ton f.o.b. shipping point when sold by dealers.

CAPEHART ADJUSTMENTS — Amendment 2 of General Overriding Regulation 42, effective Feb. 4, 1953, permits manufacturers to include in their ceiling price adjustments under the Capehart amendment those costs authorized under General Overriding Regulation 10, covering manufacturers in a loss position, and those under General Overriding Regulation 29, covering essential producers of essential commodities. Outbound transportation costs may not be reflected in such adjustments unless authorized specifically for the particular industry.

COAL MINING EQUIPMENT — Amendment 3 of General Overriding Regulation 42, effective Feb. 4, 1953, authorizes an industry earnings standard increase of 7 per cent in current ceiling prices for manufacturers of electrically operated underground coal mining machinery and equipment, including accessories and repair parts.

BOILERS, RADIATORS—Amendment 4 of General Overriding Regulation 42, effective Feb. 4, 1953, authorizes an increase of 5 per cent in ceiling prices for manufacturers of cast iron boilers and radiators.

Priorities Assistance Lags

Some 1695 oil and gas operators received priorities assistance for purchase of 309,372 tons of casing and tubing in the second quarter of 1953, Petroleum Administration for Defense reports.

The tonnage is less than a third of the 1,086,724 tons requested and is almost 150,000 tons below actual requirements on the basis of PAD calculations.

Inventory Center Moves

National Production Authority's "machine tool inventory center" is transferring its Washington headquarters from the Old Post-office building to the New GAO building today (Feb. 2). The center, formally known as the Production Equipment Central Inventory Group (PECIG), will be placed in NPA's Metalworking Equipment Division.

Summarizing PECIG's work to date, directors say the center has inventoried more than 34,000 tools since May 12, 1952.

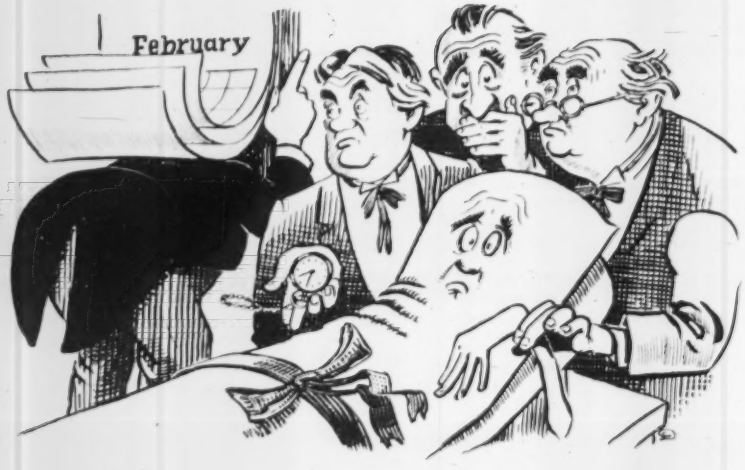
Plan New Company and Plant

Apex Smelting Co., Chicago, announces the newly formed National Metallurgical Corp. will build and operate its pilot plant at Springfield, Oreg., for production of aluminum-silicon metal from clays.

Joining with Apex, The American Smelting & Refining Co. of New York has acquired a half interest in the new corporation. Officials believe the plant will be in production by June 1 this year.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*



CONGRESSMEN PONDER DEFENSE PRODUCTION ACT

. . . will controls expire before Apr. 30?

Congress prepares to decide whether to drop control power under the Defense Production Act. Congressmen await Eisenhower's recommendations

FIRST PLACE on agendas of congressional Banking and Currency Committees is consideration of the Defense Production Act. Expiration dates for this act are Apr. 30 for wage, price and rent controls, and June 30 for the other titles. No activities will be scheduled until the committees have studied recommendations of President Eisenhower. The immediate question is whether to terminate or limit control power.

Agree With Industry — Several leading congressmen have swung over to a widely held industry view that installation of government-owned equipment in privately-owned and operated plants, as permitted under the Defense Production Act, may harm free enterprise. The government might enter manufacturing industries as it has embarked into electrical generating and other businesses.

Arranging for government ownership of these facilities without shackeling industry will not be done easily. First, it will be difficult to avoid government ownership as many plants still to be built as part of the mobilization base will have no peacetime economic warrant. Second, many competent companies do not have the funds to build and equip such plants, even under favorable government contracts.

Military authorities are determining mobilization base programs which the country will need for military purposes in a "bare-bones" economy. They estimate that by March they should be ready to report to Congress on existing deficiencies. The Truman budget contains a request for $500 million for use in fiscal 1954 toward filling these deficiencies.

Show Need for Security . . .

Contractors, the Munitions Board points out in its latest Security Letter, must shoulder the blame when classified information about their defense work leaks out through their plant personnel. They are responsible for indoctrinating their employees on the security aspects of their work.

Reflecting the increased emphasis on security, the Department of Defense will release no more aerial photographs of military installations and other possible target areas unless approved by the Security Review Branch, Office of Public Information.

In Congress, some tough legislation is in prospect. The House Un-American Activities Committee recommends that it should be a crime for unauthorized persons to transmit classified government documents in interstate commerce. The present law only cracks down upon showing intent to use classified information against the national interest.

Slow Price Adjustment . . .

"To illustrate delays which small firms encounter in their dealings with OPS," reports the House Small Business Committee, "approximately two months have been allowed to elapse in handling an application for price increases by a firm which clearly indicated its loss position due to price controls.

"The hardship position of the firm in question has increased materially as a result of this delay. This is contrary to an inter-agency directive that all applications for price adjustment should be acted upon within 30 days."

Friend or Foe? . . .

The American Federation of Labor's League for Political Education says the labor vote in 1952 "prevented a reactionary sweep in Congress" and cut down the loss in legislative support of union programs.

The report admits a serious loss in congressional support. It indicates that in the present House of Representatives 160 members are friendly to organized labor, 239 unfriendly and 36 doubtful. In the last House, 181 members were friendly, 222 unfriendly and 32 undetermined.

In the Senate, 38 members are said to be friendly, 57 unfriendly and one doubtful. In the Truman administration last year, 40 senators were friendly and 56 unfriendly.

Industry's Newest Cost Cutting Method: Hydroforming

CINCINNATI 26" HYDROFORM
Also built in 12", 19", 23" and 32" standard sizes. Machine size indicates maximum blank diameter that can be formed. Material thickness can range from foils to ⅜" steel. Bulletin M-1759-1 gives data on the Hydroforming process as well as machine specifications. Write for your copy.

Hydroforming has given industry an improved, *simplified* deep drawing process. Parts can be drawn of more intricate shape — having improved mechanical and physical values — in far fewer operations than common practice allows.

Tool costs run as low as 10% of conventional die set costs, making short-run production exceptionally economical. Trial parts are quickly produced. Tools can be readily modified to suit changes in part design. Different gages and types of materials can be tried, drawn on the same set of tools.

Hydroform tooling consists of the simplest elements of conventional tooling—a male punch and one draw ring. A built-in universal die member takes the place of the female die and the other parts of conventional tooling. Sheet materials, held between the punch and the universal die, are formed to the shape of the punch by *controlled* hydraulic pressure.

Investigate Hydroforming for your production. It will change your thinking on deep drawing and forming. The Cincinnati Milling Machine Company representative in your area will gladly give you detailed information. In addition, at the "Mill" in Cincinnati, a Hydroform laboratory is maintained where runs of sample parts are produced and where this revolutionary deep drawing principle can be demonstrated most effectively. Interested manufacturers are invited to inspect these facilities.

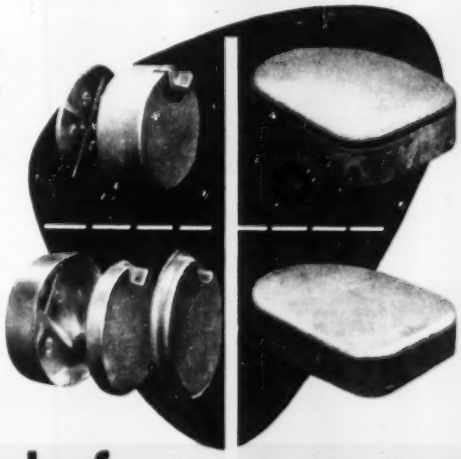
HERE'S WHAT HAPPENS WHEN HYDROFORMING ENTERS THE PRODUCTION PICTURE

ELECTRONIC INSTRUMENT CASE
0.040" Aluminum
FORMER METHOD Deep Drawn and Fabricated
12 Operations Total

Photo shows, in sequence form, the operations formerly required to produce this part. The shallow cover was drawn in 1 operation; the body required 2 draws, to sharpen the inside radius. The body was then notched to receive a plug receptacle, which was hand fabricated and welded in place.

HYDROFORM METHOD Deep Drawn
7 Operations Total

By re-designing the part to take advantage of Hydroforming capabilities, the part that was previously the cover became the body, produced complete with locating edge in 1 forming operation on a 12" Hydroform machine. The cover, with plug receptacle as an integral part, was formed in 2 operations.



GEAR CASE COVER, 16 ga. Steel
FORMER METHOD Fabricated
8 Operations Total

Previously produced, as photographed, in 2 sections, formed on a press brake. The sections were welded, ground and polished to remove excess weld material and re-shaped to fit the area to be covered.

HYDROFORM METHOD Deep Drawn
3 Operations Total

The part is now Hydroformed complete in 1 draw, then trimmed. The photo at top of page shows the part being drawn on the 26" Hydroform. The saving in fabrication time alone paid for the cost of tools used to Hydroform this part, although less than 300 of these covers are required per year. The Hydroformed covers are held to close tolerance, eliminating a fitting problem that existed when these parts were fabricated.

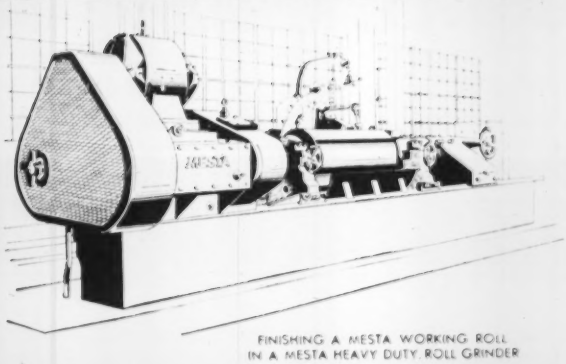
CINCINNATI **Hydroform**

THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO, U.S.A.

MESTA

HIGH-SPEED COLD MILLS

MESTA 4" FOUR-HIGH, TWIN-STAND HIGH-SPEED TIN PASS MILL INSTALLED IN A LARGE EASTERN STEEL PLANT



FINISHING A MESTA WORKING ROLL IN A MESTA HEAVY DUTY ROLL GRINDER

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

Reading Time: You Can Cut It Down

Dig yourself out from under that mountainous pile of mail, reports and magazines on your desk by teaching yourself to read faster. You can save hours of time

By HAL JOHNSON
Director, Reading Improvement Laboratory
Case Institute of Technology

HOW MANY pounds of mail snow you under every day? How many reports do you wade through each week? How many business magazines cross your desk in the course of a year?

In these days of increasing complexity of industry and government and rapid economic and technological changes, the rising volume of reading matter is required to keep pace with developments. But even so, you can cut down on the time you devote to business reading.

No Mystery—You can do that by teaching yourself how to read. "But I can read," said one executive when the problem was put to him. "I've known how since the fourth grade."

That's the trouble. After the fourth grade most formal reading instruction ceases. The average reader, equipped with the bare rudiments of turning symbols into words, is ushered forth into a read-world to fend for himself. He continues his plodding way while the reading material becomes more difficult and larger in quantity.

The Reason Why—Little wonder that the daily newspaper is slanted at the sixth-grade perusing level. And little wonder that you complain about the hours spent in business reading.

To cut down on reading time, you must acquire a new set of reading skills. There are ways to do it. The accompanying list of seven hints can get you started in the right direction. They are suggestions which have been proved in practice.

Matter of Practice—Studies indicate that the average adult reads only about 250 words a minute. Research also proves that you can boost your reading speed from 50 to 100 per cent without loss of comprehension. With concerted effort, you should be reading average material (fiction, magazine articles) at about 500 or 600 words a minute within a matter of weeks. Keep a record of your gains, and make a point to test yourself three or four times a week.

There are 610 words of text on this page, including the boxed portion. How fast did you read them? A good reader can do it in 60-75 seconds.

How To Read Faster

1. Find out how rapidly you read by selecting from a magazine an article of interest. Read with the intent of comprehending for exactly three minutes and then determine your rate in words per minute.

2. In your reading, force yourself to move ahead. Don't go back over material that seems hazy, but try to clarify meanings as you progress down the page. The more regression, the slower the reading.

3. Before actually reading, survey the material. Anticipating what the author is going to say makes for increased speed. In reading a detective story you learn to solve the crime before the author does.

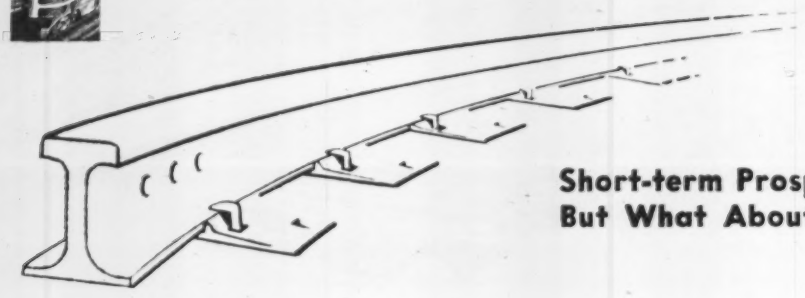
4. Form the habit of grouping words into thought units. Take the sentence, "The boss wants this finished by five o'clock." Break it into thought units like this: "Boss—wants this finished—by five." Words have more meaning when grouped in thought units.

5. Don't read every word. The efficient reader automatically supplies words such as *a, and* and *the*. It is more important to concentrate on ideas. Omitting excess baggage in a sentence does not alter its meaning and increases reading speed.

6. Be aware of the pauses the eyes make in their forward movement during which they are able to focus on the print. The more pauses, the more inefficient the reader. The eyes should move in a definite rhythm, pausing about the same number of times each line, and about the same length of time each pause. There should be few regressions.

7. Make periodic time checks of your reading speed. And practice, practice, practice. You will find that no matter how fast a reader you are now, you can still improve.

RAILROAD PERSPECTIVE:



Short-term Prospects Are Good, But What About the Long Pull?

THE NATION'S railroads expect to spend about $1.4 billion on capital equipment in 1953, above the $1374 million in outlays for 1952, but below the record $1,413,971,000 spent in 1951.

Plans which railroads of the United States had for increasing volume of traffic and for expanding and improving of facilities in 1952 got side-tracked. The schedules got crossed up by the long steel strike which caused a terrific loss in car loadings, consequent shrinkage in net earnings, and at the same time created such a serious steel shortage that construction programs had to be drastically curtailed.

Relatively Good—But in spite of the fact the timetable got stalled, the carriers emerged in reasonably good condition financially in better position than a year ago. Thus they enter 1953 with a fair degree of optimism. For the first six months, at least, the light is green and there's growing belief it may remain green through the year.

Revenue freight car loadings in 1952 totaled 37,983,428, a decline of 2,515,754, or 6.2 per cent, from the 10,499,182 in 1951. About half of this decline is directly attributable to the steel strike. Loadings in 1950 were 38,902,641, and the all-time high stands at 44,502,000 in 1947.

Decline in Freight—Class I railroads performed an estimated 612,000 million ton-miles of freight service in 1952, which, compared with the 646,607 ton-miles of 1951, was a loss of between 5 and 6 per cent.

Passenger traffic for last year is estimated at about 34.2 billion passenger-miles, a small decline from the 34.6 billion handled in 1951.

A Little Better—Despite the fall in traffic, the railroads ended 1952 with a slight improvement in their financial condition, due to the 6.8 per cent increase in freight rates authorized by the Interstate Commerce Commission last spring.

Operating revenue of Class I railroads in 1952 approximated $10.6 billion, a new all-time high, and an increase of about 2 per cent over 1951, when the figure was $10,391 million. Operating expense of nearly $8.1 billion also struck a new high, increasing about 0.33 per cent over the $8041 million of the preceding year.

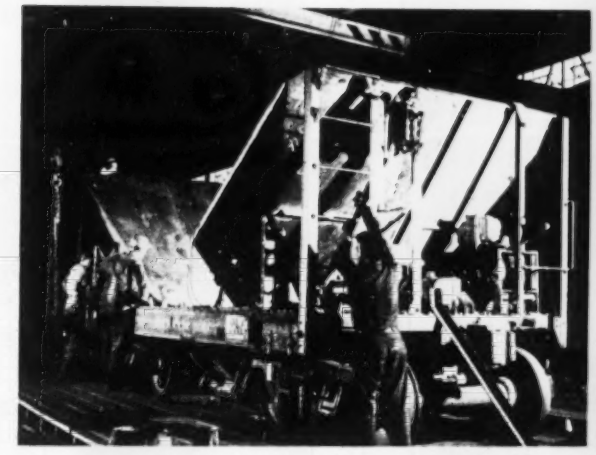
Terrific Taxes — After paying record peace-time taxes of approximately $1.3 billion and equipment and joint facilities rents, Class I railroads had a net operating income in 1952 equivalent to a rate of return on net property investment at end of year of about 4 per cent, one of the lowest rates for any industry. That compared with a return of 3.70 per cent earned in 1951. After interest and other charges, net income for the year approximated $775 million, compared with $693 million in 1951 and $783 million in 1950.

Present indications are that rail traffic volume may continue at 1952 levels during the first six months of 1953, with a possibility of some decline during second half.

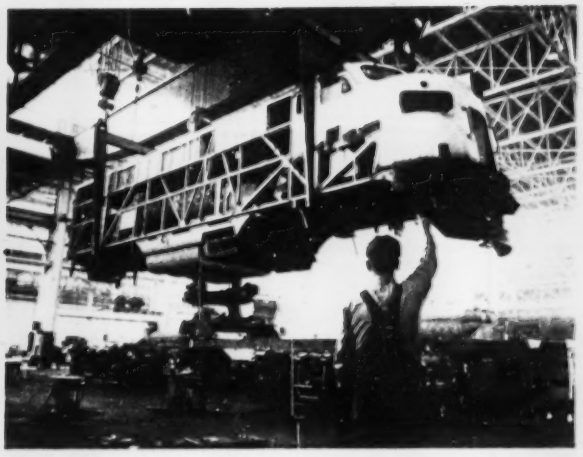
Freight Car Goal—The freight car fleet at present is about 1,760,000 units. The carriers want a fleet of 1,850,000 Class I cars by the beginning of 1955. That number should be sufficient to take care of military and civilian traffic needs during full mobilization.

Late last November, the railroads reaffirmed the pledge made following outbreak of the war in Korea in 1950 to increase freight car ownership of Class I roads to the 1,850,000 total. At the beginning of 1953, net increase still needed to reach this goal was more than 90,000 cars. As it will be necessary to replace about 120,000 cars to be retired during this two-year period, the program will require construction of some 210,000 new cars. With an adequate supply of steel, a production rate of 10,000 cars per month could be reached by the fall of 1953, and if maintained, the gain of 90,000 cars can be achieved by end of 1954.

Signs of Steel Strike — Steel shortages during 1952, accentuated by the long steel strike, retarded the program to increase freight car



To meet the 1955 goal of 1,850,000 freight cars, builders are striving for 10,000 new cars a month



Economy of operation continues to push construction of diesel locomotives far beyond other types

supply. While the railroads have continually requested steel allocations for at least 10,000 new cars a month, production reached a low of 3762 last September.

Some 65,000 new cars were placed in service in 1952, but because of retirement of old cars at a rate of about 5000 per month, the net gain was slight. Deliveries for the full year, 1951, were 95,943 cars. Approximately 85,000 cars were on order and undelivered as of Jan. 1, 1953, compared with 123,947 units on Jan. 1, a year ago.

Car production goal for second quarter this year should reach 9000 a month. If that rate can be achieved, the rate of 10,000 a month by fourth quarter should be attainable. It is estimated that orders for about 240,000 new cars will materialize in the next 21 months.

Locomotive Handicap — Locomotives installed in service also fell during 1952, due largely to the steel shortage. Despite this, an estimated 2415 locomotives were put into service last year, as compared with 2558 in 1951.

To effect economies in operation, the railroads again extended use of the diesel-electric locomotive. Majority of all new locomotives placed in service were of this type with declining popularity of new steam engines. Limited orders for new type gas turbine locomotives were placed during the year after several units had completed successful testing over an extended period.

The Diesel Leads—Locomotives installed in 1952 include: 2389 diesel, 19 steam, 1 electric and 6 gas turbine for a 2415 total. The breakdown for all of 1951 was 2537 diesel, 18 steam and 3 electric, for a total of 2558.

Class I railroads had 832 new locomotives on order on Dec. 1, 1952, these including 788 diesel, 19 gas turbine, 15 steam and 10 electric. On order at the start of 1952 were 1709 diesel, 19 steam, 1 electric and gas turbine-electric, for a total of 1739.

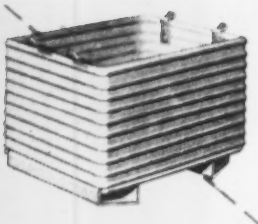
Outlook Good — Prospects are looking up for locomotive building this year. Enough materials are being allocated for manufacturers to produce 883 units in the second quarter. Of this number, 800 will be for U. S. railroad use, the balance for industrial, military and export purposes. Supremacy of the diesel as a railroad prime mover is well intrenched. Evidence is the widespread conversion by railroads of their steam shops for diesel servicing and repairs.

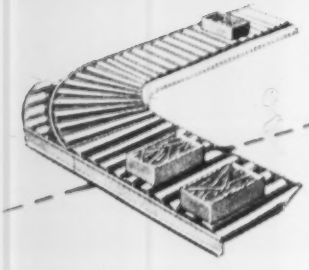
The future, however, could see diesel supremacy threatened by the gas turbine development. That conclusion is based on two years and 50,000 miles of experience with one experimental unit. Gas turbines can utilize either oil or coal. Although they have a bigger fuel appetite than the diesel, they thrive on cheaper grade.

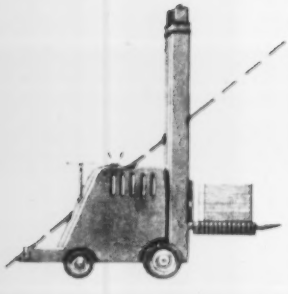
Not Enough Rails—Insufficiency of steel rail is another serious problem faced by the railroads. Allocations in second and third quarters last year were 363,000 tons and 387,000 tons, respectively, but, of course, the carriers didn't get deliveries on their full quotas because of the steel strike. Prospects are that the roads will fare better starting next quarter. The industry maintains that 400,000 tons a quarter is the minimum need to replace track worn out by heavier traffic and steadily increasing speed of operation.

Although the railroads will buy heavily in 1953, what about future years? Some officials in the industry think railroads will be in dire financial straits if the economy operates at less than full tilt for a year or more. Then, capital buying would drop drastically. Rail profits are ominously low and investment capital scarce. Trucks, inland waterways and airplanes continue their inroads into rail business. So alarmed are some that a group of eastern railroad presidents has organized to seek less stringent ICC regulation of their industry, less subsidization of rival forms of transportation and a revitalization of railroad management.

Handle materials better, more cheaply, with equipment made of







N·A·X
HIGH-TENSILE STEEL

Minimum product weight and long product service are just two important reasons why N-A-X HIGH-TENSILE steel is ideally suited for tote boxes, pallets, conveyors, lift trucks, and other equipment used for transporting materials.

Because N-A-X HIGH-TENSILE steel has exceptional strength and durability, thinner sections can be used, yet it resists abrasion, impact, fatigue, and corrosion. N-A-X HIGH-TENSILE steel gives your equipment longer life and reduces deadweight to the minimum; you can carry a greater net load of material with no increase in the gross load weight. And N-A-X HIGH-TENSILE steel has exceptional welding and fabricating qualities – important advantages where custom-made materials-handling equipment is required.

If you are interested in better, more economical materials-handling, why not investigate N-A-X HIGH-TENSILE steel *now?*

MAKES A TON OF SHEET STEEL GO FARTHER
Specify N·A·X HIGH-TENSILE STEEL

... And "MAKE YOUR PRODUCT LAST LONGER"

It's your SCRAP that makes your STEEL

GREAT LAKES STEEL CORPORATION
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NATIONAL STEEL CORPORATION

Mirrors of Motordom

General Motors runs a super test of 13 of its own cars and 17 others to see how they compare. The action could herald new competitive efforts by GM

DETROIT

IN FILES of the General Motors Corp. are reports which would-be car purchasers and other automakers would undoubtedly give a pretty penny to see.

These are the test results obtained from day-and-night driving of 30 cars—13 GM and 17 made by other companies—over a 13-week period at General Motors' proving grounds. Each car rolled up 25,000 miles, but because of the severity of the test this mileage is equivalent to perhaps 100,000 miles of more conventional operation. At the conclusion of the test, each car was torn down to the last nut and bolt to see where wear had occurred and how severe and extensive it had been.

General Rule—It is no secret that every car maker tests its own and its competitors' cars extensively. General Motors, however, believes that its tests are the most exhaustive of those conducted. Impeccable impartiality was maintained throughout, even to the extent of switching drivers so that each car was given as nearly as possible the same treatment.

The impartiality and the exactitude with which the tests were carried out are what would make the reports of great value to the public. Parts suppliers would also be interested in finding out how their products had performed, not to mention how worthwhile these test reports would be to other car makers. It is just wishful thinking, however, to hope that this information might be made generally available. Its benefits to the public will not be so direct as to let everyone know how all makes of cars stack up in this kind of test, but the benefits are nonetheless real. If in analyzing the results General Motors officials discover that their cars have not measured up in any significant particulars, you can be sure that work will be done to improve that situation. And the same reasoning is applied by every other company which realizes it has to compete successfully to survive.

Auto, Truck Output

U. S. and Canada

	1952	1951
January	409,406	645,688
February	467,691	658,918
March	517,207	792,550
April	576,505	680,281
May	546,673	695,898
June	550,947	653,682
July	246,461	522,858
August	293,722	571,442
September	592,253	505,758
October	645,862	558,971
November	550,885	480,323
December	568,577*	402,729
Total	5,976,189	7,179,161

Week Ended	1953	1952
Jan. 3	106,102	53,601
Jan. 10	139,620	92,741
Jan. 17	148,718	98,669
Jan. 24	149,550	94,722
Jan. 31	151,000*	102,402

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

How It Was Done—So while the results of this testing are not going to be told, it is nevertheless interesting to know something about the conduct of the tests. It was run last summer at GM's proving grounds near Milford, Mich., about 40 miles northwest of Detroit. The test required, directly and indirectly, about 400 people at the proving ground. The two largest groups were the 117 drivers and the 81 ground maintenance men. Twenty-one mechanics were required to service the cars. Accurate records were kept on each car, noting part failures, cost of replacement parts and labor (charge being made on the basis of labor and materials costs at service shops in the Detroit area), quantities of gas and oil used, number of tires worn out (average life in these severe tests was 8000 miles), required adjustments, and other items. Maintenance of all cars was as prescribed by the manufacturers.

For an idea of the driving conditions encountered, here is a typical schedule: "Run one lap of the speed loop (3.8 miles long) at 55 miles per hour. Make a fast brake stop without skidding tires. Repeat lap and fast stop. Accelerate at full throttle, traffic permitting, and run a lap at five miles per hour below maximum speed, with speed limited to 80 miles per hour on turns. Stop. Turn off engine. Check for vapor lock or other bad conditions. Approach 11 per cent hill at 10 miles per hour in third gear. Apply full throttle at first marker. Proceed on gravel hill route at not over 45 miles per hour. Proceed on Belgian block road (paved with granite blocks set unevenly in concrete) at 35 miles per hour. Stop and proceed 50 feet in reverse."

Checked—When the last tortuous mile had been covered the cars were completely stripped, their parts tagged to show where replacements had been made, where replacement was indicated, or the extent of wear which was evident. Allowed to view this display were only the top engineering executives of GM's Car, Body, Parts and Research divisions.

Another Test, but More Public

Another kind of test whose results are exposed to the widest kind of circulation was described at the recent meeting of the Society of Automotive Engineers in Detroit. This is annual Mobilgas economy run. A common gripe of ordinary drivers when they talk about this event is that their cars fail by a wide margin to give the kind of gasoline economy which not only the winners but all entrants to this contest get.

In 1952's run the 25 entering cars covered the 1415 miles of the course over tough terrain at an average speed of 40.44 miles per hour and obtained an average of 22.01 miles per gallon of gas. This mpg might be considered par.

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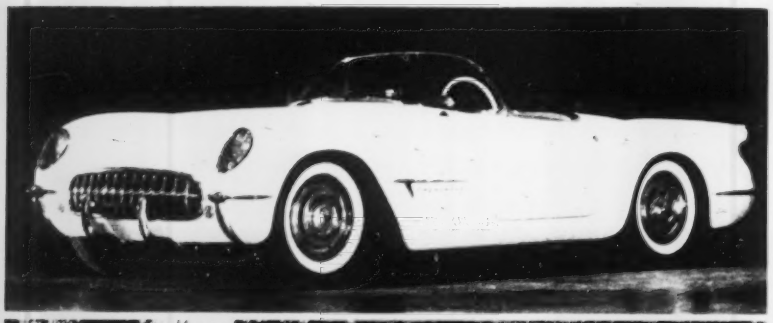


Nash and Chevrolet Put Their Best Teeth Forward

The open-mouthed grinning grille is with us more than ever. Nash continues to show a full set of teeth in its 1953 Statesman Country Club custom hardtop convertible, introduced in January, while Chevrolet smiles at the future with an experimental sports car, the Corvette, unveiled at the General Motors Motorama in New York last month. The Corvette is not expected to show its face on the streets for six months to a year, but the Nash Statesman is out now

something for the average driver to shoot for since he knows it can be done.

The way the contest was conducted in 1952 answered a lot of criticisms which had been voiced by automotive companies over the previous two runs. In the 1950 run, tune-up of the cars appeared to have been a deciding factor, and, according to W. S. Mount of Socony-Vacuum who prepared the SAE paper, some of the entrants had "the most carefully tuned stock cars ever put on the road." Rules therefore were tightened for the 1951 race to make car conditions more nearly typical. The drivers for that year's contest answered by improving their driving techniques, some by running the course 10 to 12 times previous to the test and keeping a plot to guide them for utmost economy.

The sponsoring American Automobile Association changed its rules for the 1952 run to get winning results which the public might find more believable. It kept the course route secret until about a week before the event so that drivers would not have an opportunity to memorize it. AAA eliminated many of the optional equipment choices so that the cars were strictly stock, and it picked a course which contained city driving, difficult mountain and snow conditions, and reasonable fast level roads.

Here are some of the observations made as a result of this latest run: New automobile designs are less sensitive, economywise, to variations in driver technique; new powerful engines can perform economically over a wide range of road driving conditions. The run tended to prove that reasonably high power is a factor in economy if kept in reserve until needed; both high and low compression ratio engines made fine economy records.

Answering a question as to what's in this run for the car manufacturer, Mr. Mount says that the industry's engineers have long known how to build economy-type cars, but the run has stimulated public interest in this subject. "It showed," he adds, "what could be done with modifications of rear axle gear ratio. It was a factor in development of dual-range automatic transmissions. It has popularized overdrive. Its altitude effects have focused additional design attention upon the newer, more complicated carburetors. It has emphasized well-balanced gasoline."

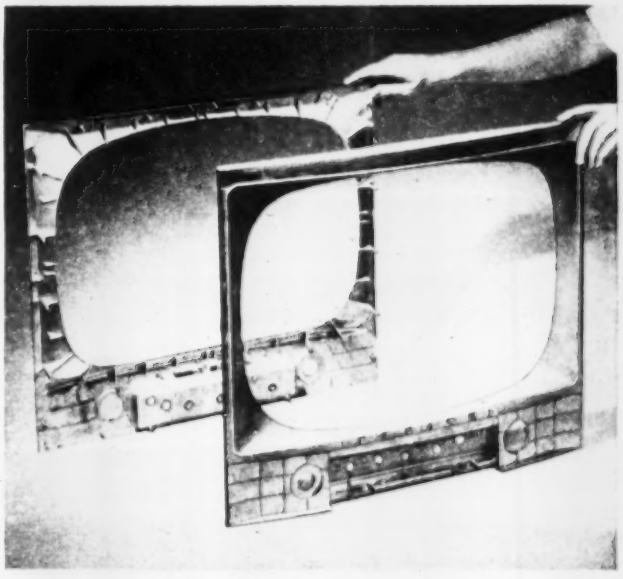
K-F Readies Sports Car

Out at Willow Run one of the problems causing some headscratching is a name for the three-seater sports car Kaiser-Frazer will begin producing this July. Last week it was announced that plans have been laid to build the car which President Edgar F. Kaiser described in some detail to newsmen last fall (STEEL, Oct. 6, p. 61). For the time being the car will be identified as DKF-161.

Body of the car, which will be placed on a Henry J chassis, will be made of polyester resin and fiber glass laminate, to give the vehicle an over-all weight of about 2000 pounds. With engine modifications which seem likely to be made for sports-car use, the car weight-to-horsepower ratio might be about 20 to 1, far lower than any of the production cars currently in use.

Kaiser-Frazer does not have figures yet on what the price of the new car may be, but a goal which Mr. Kaiser would like to be able to realize is about $1 per pound. Such targets have a way of moving around, so maybe $500 or so more might have to be added before the drive-it-away price is determined. But even so, the market potential for such a car appears to be substantial. It's good enough, K-F believes, so that instead of the initial 1000 unit production which the company had planned as a test, 2000 of the cars will be built.

Which producer of the plastic-glass bodies will be given the order has not yet been determined, but two are being mentioned as possibilities: Winner Mfg. Co. Inc. and Glasspar Co.



get the mo$t for your Zinc Die Ca$ting Dollar!

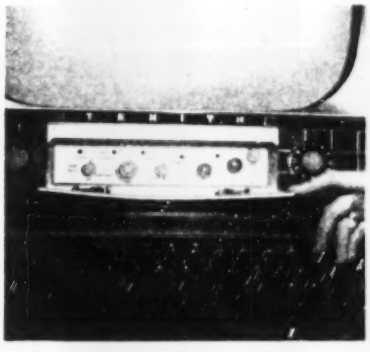
The combination screen and control panel escutcheon for the latest Zenith 21-inch television receiver—shown from both sides above—embodies most of the design and production advantages offered by ZINC Die Casting. How else could the escutcheon have been produced at comparable cost? Consider these details:

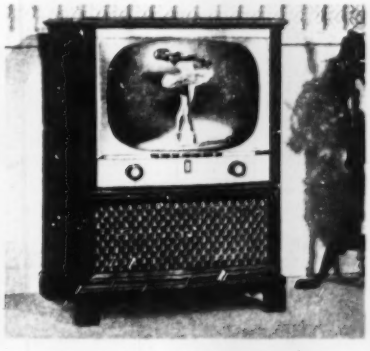
1. Many machining and assembling operations are avoided since all projections, recesses and openings are cast or cored with a high degree of dimensional accuracy in the die casting operation.

2. Cost is further minimized by the high speed at which the ZINC Alloy is cast in a hot chamber die casting machine.

3. Section thicknesses are kept at a minimum to conserve both metal and weight (note the strengthening ribs in the rear view) and there is no scrap loss.

4. Not only are decorative effects faithfully reproduced on the face of the escutcheon, but raised lettering is cast with clean-cut detail (see engraving in the recess behind the control panel door at the left below). The smooth cast surfaces permit low cost finishing with modern organic coatings to provide a gold plated appearance.





GET DESIGN DATA EARLY

The surest way to realize the full physical and economic advantages of ZINC Die Castings is through consultation with a competent die casting engineer in the *early* design stages. Ask any die casting company for help and ask them—or us—for a copy of "Designing For Die Casting."

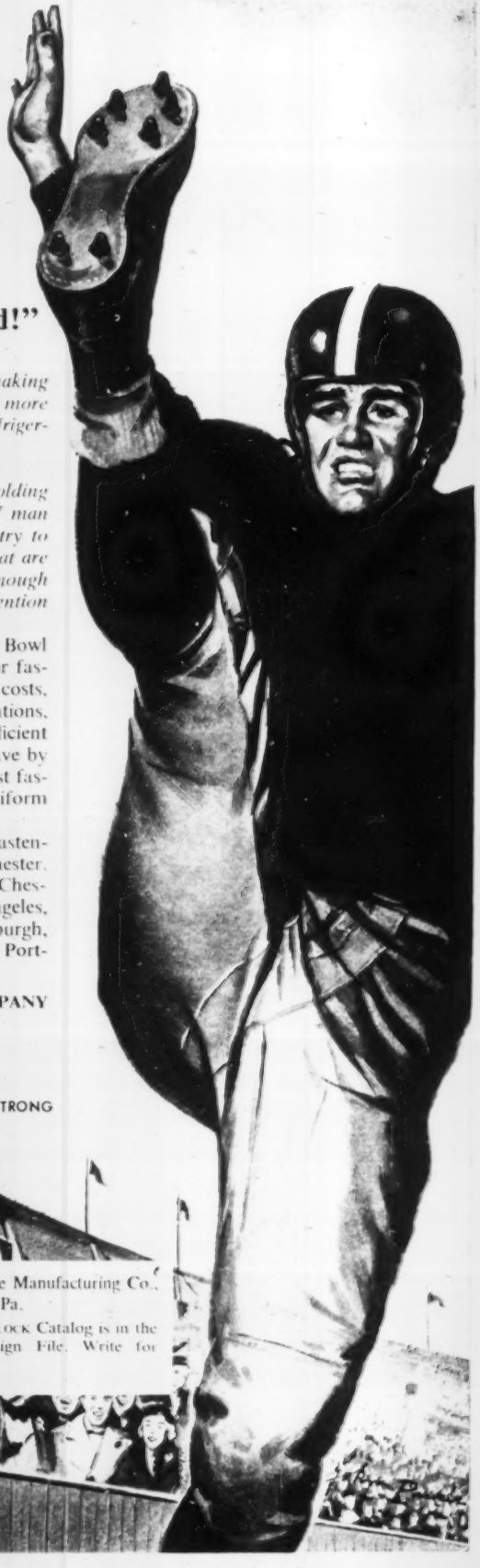
The New Jersey Zinc Company
160 Front St., New York 38, N.Y.

ZINC
FOR DIE CASTING ALLOYS

The Research was done, the Alloys were developed, and most Die Castings are based on

HORSE HEAD SPECIAL (99.99 + % Uniform Quality) ZINC

"That PUNT certainly proves any assembly problem can be licked!"



Mike continued, *"What my company* found out making football shoes can help any manufacturer get better, more economical production. I'd say that includes your refrigerators, Tom."*

"How come?" said Tom.

"I never thought any screw would be just right for holding cleats to my football shoes. That's before the RB&W man came to my plant, and persuaded me to let RB&W try to develop one for me. Now I'm using RB&W screws that are ductile enough to go along with the impact, yet tough enough not to break. It just proves we should all pay closer attention to our fasteners. It really pays off!"

There's a cost-cutting lesson for you in this Rose Bowl conversation, whatever your industry. So look to your fasteners for an often overlooked opportunity to reduce costs, and strengthen your competitive position. New inventions, like RB&W's SPIN-LOCK Screw, may prove more efficient than the fasteners you're now using.** Or you may save by the stepped-up production you get from using the finest fasteners . . . RB&W bolts, screws, nuts and rivets of uniform accuracy, dependability and physical properties.

Let RB&W help you make the most efficient use of fasteners on your assembly line. Address RB&W at Port Chester.

RB&W—The Complete Quality Line. Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices: Philadelphia, Pittsburgh, Detroit, Chicago, Dallas, San Francisco. Sales agents: Portland, Seattle. Distributors from coast to coast.

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

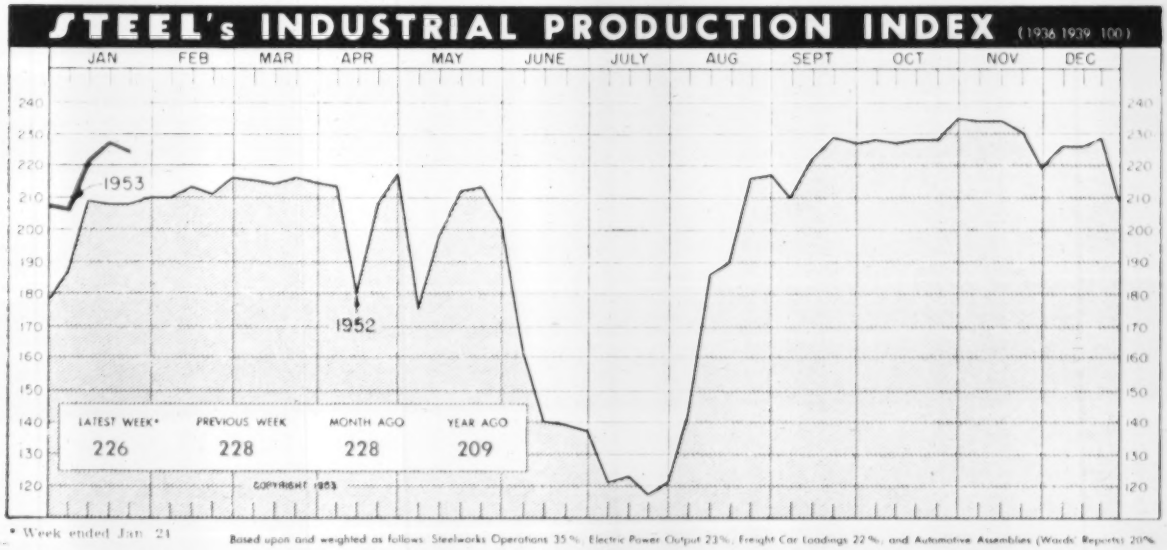
RB & W

107 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

*Brooks Shoe Manufacturing Co., Philadelphia, Pa.

**New SPIN-LOCK Catalog is in the Product Design File. Write for extra copies.

The Business Trend


STEEL's INDUSTRIAL PRODUCTION INDEX (1936 1939 100)
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1953
1952
LATEST WEEK* PREVIOUS WEEK MONTH AGO YEAR AGO
226 228 228 209
COPYRIGHT 1953

* Week ended Jan. 24

Based upon and weighted as follows: Steelworks Operations 35%, Electric Power Output 23%, Freight Car Loadings 22%, and Automotive Assemblies (Wards' Reports) 20%.

Added capacity may mean more production in the next few months. The machine tool industry hopes for good sales in 1953. Industrial activity index edges down

THERE'S increasing assurance of high-level industrial production throughout most of 1953.

Manufacturers of defense and civilian goods are both predicting that demand will remain strong and available materials will increase. In addition, industry is backing up these forecasts with added capacity.

Businessmen will spend around $26.3 billion on new plant and equipment during 1953, say economists in the Commerce department. The estimated $26.3 billion is only $600 million under the peak expenditures reached during 1952 and less than $100 million under outlays in 1951. This means production can increase at an only slightly lower momentum than was possible in the past two years.

Leveling Off?—Another sign of encouragement comes from the machine tool industry. The new order index of the National Machine Tool Builders Association halted a six-month decline in December and inched up 17.1 points to 222.5 per cent of the 1945-1947 average. The real significance of the increase is not yet fully apparent, since much of the increase may have resulted from the lifting of restrictions on unrated orders. But many tool builders are saying that 1953 will be a good year, so new orders for machine tools may be at or nearing the low-point.

Plateau Reached — The nation's industrial activity also seems to have leveled off temporarily, but on a high plateau. STEEL's industrial production index in the week ended Jan. 24 edged down 3 points to 226 per cent of the 1936-1939 average. Steel production declined as a strike in the Youngstown district cut the national rate. Electricity production, automotive operations and freight car loadings made slight gains during the week ended Jan. 24.

Fast Output in Autos . . .

The automotive industry is keeping the throttle pulled out on production. Both passenger car and truck assemblies are running at unusually high levels, although car production is the more spectacular. *Ward's Automotive Reports* estimates that U. S. manufacturers in January completed 455,000 passenger cars, up 59 per cent from output in January, 1952. This 455,000-unit turnout is still under previous estimates on passenger vehicle production. Labor difficulties and unexpected inventory snags whittled 20,000 units off the scheduled total for passenger cars in January.

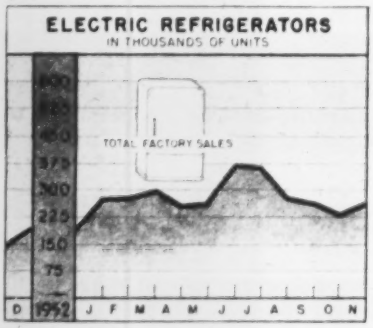
Truck production is moving along the plateau reached in December. Around 111,000 trucks were driven off production lines in January. This brings last month's output to nearly 9 per cent over truck assemblies in January, 1952.

Combined U. S. and Canadian auto-truck production in the week ended Jan. 24 attained 159,550 units, the highest weekly production since October. This output is more than 57 per cent over production in the comparable week of January, 1952.

Refrigerator Sales Up . . .

Diverse trends are shaping up in the market for household electrical appliances. Demand is warm for refrigerators and cool toward electrical stoves. The National Electrical Manufacturers Association says that factory sales of electric household refrigerators in November totaled 278,557 units, up 88 per cent from November, 1951, but 32 per cent under the post-Korea sales volume in November, 1950.

Range sales, on the other hand, in November remained under the

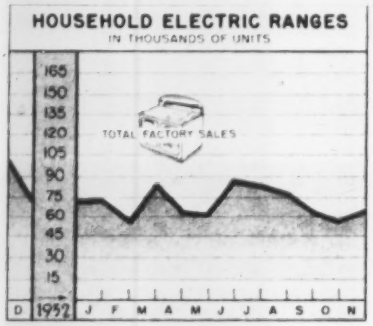


Electric Refrigerators

Total Factory Sales—Units

	1952	1951	1950
Jan.	275,297	465,903	375,856
Feb.	277,986	403,035	461,256
Mar.	298,092	558,503	586,293
Apr.	255,009	409,887	546,279
May	256,378	396,722	542,856
June	374,196	261,298	549,710
July	366,372	163,922	507,029
Aug.	272,985	165,309	518,359
Sept.	257,362	193,929	535,092
Oct.	232,931	191,519	420,431
Nov.	256,530	147,394	411,291
Dec.	.....	156,493	394,268
Total		3,165,824	5,548,579

National Electrical Mfrs. Assn.

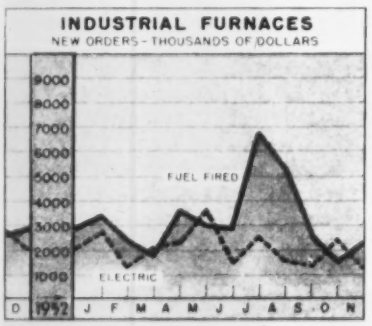


Household Electric Ranges

Total Factory Sales—Units

	1952	1951	1950
Jan.	72,830	130,316	97,925
Feb.	55,728	121,585	118,989
Mar.	83,485	159,865	145,417
Apr.	62,746	118,823	132,859
May	61,209	106,685	145,498
June	88,063	106,589	158,534
July	84,325	69,530	130,505
Aug.	77,282	64,042	132,243
Sept.	64,260	93,551	156,216
Oct.	56,784	109,043	130,452
Nov.	65,325	101,476	129,384
Dec.	.....	72,110	124,360
Total		1,241,645	1,602,382

National Electrical Mfrs. Assn.



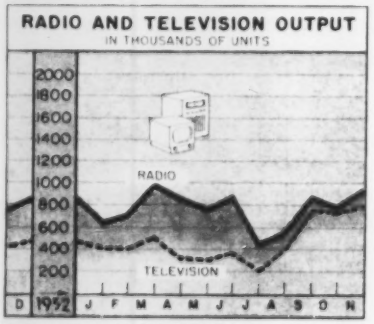
Industrial Furnaces

New Orders—Thousands of Dollars

	Fuel Fired*		Electric	
	1952	1951	1952	1951
Jan.	3,379	4,033	2,856	2,764
Feb.	2,413	4,670	1,363	3,312
Mar.	1,813	7,019	2,100	4,846
Apr.	3,606	8,497	2,298	3,657
May	3,032	5,044	3,713	4,766
June	2,954	6,258	1,552	3,370
July	6,728	5,303	2,530	5,587
Aug.	5,259	4,850	1,626	3,581
Sept.	2,462	1,821	1,412	3,250
Oct.	1,507	6,374	2,459	3,172
Nov.	2,382	2,516	1,241	2,852
Dec.	.....	2,875	.....	2,100

* Except for hot rolling steel.

Industrial Furnace Mfrs. Assn.



Radio and Television Output

Thousands of Units

	Radio		Television	
	1952	1951	1952	1951
Jan.	632	1,203	405	646
Feb.	709	1,313	409	679
Mar.	926	1,720	511	875
Apr.	848	1,337	323	469
May	748	1,373	309	339
June	871	1,083	361	327
July	442	548	199	152
Aug.	544	663	298	147
Sept.	866	1,109	756	337
Oct.	772	876	724	412
Nov.	924	748	780	415
Dec.	.....	851	.....	469
Total		12,714		5,267

Radio Television Mfrs. Assn.

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Nov. 24	Gray Iron Castings	Jan. 12	Ranges, Gas	Jan. 19
Durable Goods	Jan. 19	Indus. Production	Dec. 22	Steel Castings	Jan. 12
Employ., Metalwkg.	Jan. 19	Ironers	Dec. 22	Steel Forgings	Jan. 12
Employ., Steel	Dec. 15	Machine Tools	Dec. 15	Steel Shipments	Nov. 3
Fab. Struc. Steel	Dec. 22	Malleable Castings	Jan. 12	Vacuum Cleaners	Dec. 22
Foundry Equip.	Dec. 29	Pumps	Dec. 8	Wages, Metalwkg.	Jan. 26
Freight Cars	Dec. 29	Prices, Consumer	Jan. 26	Washers	Dec. 29
Gear Sales	Jan. 26	Prices, Wholesale	Jan. 26	Water Heaters	Jan. 19

same month in both 1950 and 1951. Factory sales of electric household ranges in November totaled 65,325 units, marking a 36 per cent decline from November, 1951, and 49 per cent under total unit-sales in November, 1950.

Steel Output Nears Record . . .

The steel industry is getting set to break production records again. The American Iron & Steel Institute estimates that steel mills in the week ended Jan. 31 poured 2,238,000 net tons of steel for ingots and castings. That's only 10,000 tons under the record output reached earlier in January.

Furnace Orders Decline . . .

The decline in new orders for industrial furnaces seems to indicate that the peak in outlays for heavier equipment is past. The Industrial Furnace Manufacturers Association says that new orders on furnaces (other than for hot rolling steel) in November totaled $2.4 million, compared with $2.5 million in November, 1951 (See chart, left). New orders for fuel-fired furnaces lagged under 1951 in eight of the first 11 months.

An even more dramatic order-lag has occurred in the electric furnace industry. Makers of electric furnaces in November received $1.2 million in new orders, less than half the value of orders placed in November, 1951. This marks the tenth consecutive month of 1952 that orders for electric furnaces lagged behind the same months a year earlier.

TV Market Soars . . .

The glowing optimism that television set makers are voicing is easily explained by the growth and prospective growth of TV sending stations. Last spring, the nation had 108 TV stations in operation. The Federal Communications Commission then lifted its ban on new stations. Since May, 1952, the commission has authorized the building of 100 more stations.

Coal Tonnage Lessens . . .

Bituminous coal production is continuing at low level, despite predictions of increased consumption

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	98.0	99.5	99.5
Electric Power Distributed (million kwhr)	8,144[1]	8,121	7,616
Bituminous Coal Output (daily av.—1000 tons)	1,586	1,591	1,887
Petroleum Production (daily av.—1000 bbl)	6,535[1]	6,524	6,194
Construction Volume (ENR—millions)	$229.1	$548.8	$309.3
Automobile, Truck Output (Ward's—units)	149,550	148,049	97,722
TRADE			
Freight Car Loadings (unit—1000 cars)	710[1]	705	728
Business Failures (Dun & Bradstreet, number)	140[1]	158	124
Currency in Circulation (millions)[3]	$29,687	$29,884	$28,342
Dept. Store Sales (changes from year ago)[4]	+2%	−3%	14%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$18,496	$16,551	$17,208
Federal Gross Debt (billions)	$267.3	$267.3	$259.3
Bond Volume, NYSE (millions)	$19.9	$19.7	$16.3
Stocks Sales, NYSE (thousands of shares)	6,866	7,723	9,202
Loans and Investments (billions)[4]	$78.0	$78.1	$74.2
United States Gov't. Obligations Held (billions)[4]	$32.3	$32.4	$32.3
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	181.31	181.31	171.92
STEEL's Nonferrous Metal Price Index[6]	213.2	213.2	243.6
All Commodities[7]	109.6	109.8	113.5
All Commodities Other Than Farm and Foods[7]	112.8	112.8	114.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1952, 2,077,040; 1953, 2,254,-459; [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939—100. [6]1926-1939—100. [7]Bureau of Labor Statistics Index, 1947-1949—100.

in 1953. Miners in the U. S. are digging about 1.5 million tons of soft coal per day, while a year ago the average was over 1.9 million tons, says the National Coal Association.

Behind the low output lie the twin factors of higher wages and higher industrial stockpiles. Many coal producers are being forced to cease operations.

Sweeper Sales Climbing . . .

Manufacturers of vacuum cleaners in 1952 swept up 4 per cent more unit-sales than during the previous year. So says the Vacuum Cleaner Manufacturers Association after a survey of member companies. Factories sold 2,841,-803 standard-size household vacuum cleaners last year, compared with 2,729,104 units in 1951. In December, factory sales totaled 249,032 units, 2 per cent under November and 8 per cent over vacuum cleaner sales in December, 1951.

Retail Volume Jumps . . .

Impressive sales were rung up by the nation's retail stores in December; dollar volume that month rose 10 per cent over December, 1951, says the Commerce department's Office of Business Economics.

Retail sales in December reached $16.9 billion, up $1.6 billion over December, 1951. Durable goods volume reached $5.3 billion, nearly $1.2 billion over a year earlier. Sales of automotive retailers climbed to $2.4 billion, or $439 million over volume in December, 1951.

Trends Fore and Aft . . .

Contract awards for heavy construction are running about 31 per cent over the dollar volume of a year ago. . . Shipments of gas ranges in the last half of 1952 were 13 per cent over the same 1951 months, but total shipments last year were down 7 per cent. . . Mild weather this winter is cutting the demand for fuel oil. . . Bank clearings are rising rapidly. . . Wholesale prices on metal products are leveling off, although most other commodity prices continue to decline. . . Business failures in 1952 were slightly under those of a year ago. . . Electricity production may have passed its seasonal generation peak in mid-December . . . Shipments of metal cans in the first 11 months of 1952 were slightly over the same months of 1951 . . . Industry shipments of automatic gas water heaters in December soared 48 per cent over December, 1951 . . . Average hourly pay of union building trades workers in 1952 increased 32 cents to $2.61.

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The Reamer Specialists

LAVALLEE & IDE, INC.

CHICOPEE, MASS.

No Pressure Wipe-Off on Gears Lubricated with Sun 897 Grease

Even heavy tooth loading won't cause Sun 897 Adhesive Pressure Grease to squeeze out. It stays on the gears, prevents metal to metal contact, prolongs gear life, and reduces lubrication costs. Sun 897 is most valuable where *throw-off* with resultant wear and spotting of products must be avoided. It is easily applied with a brush on open gears, sprockets, chains, slides, cams, cables, couplings and linkages. For complete information, consult your nearest Sun representative or write Department S-2.

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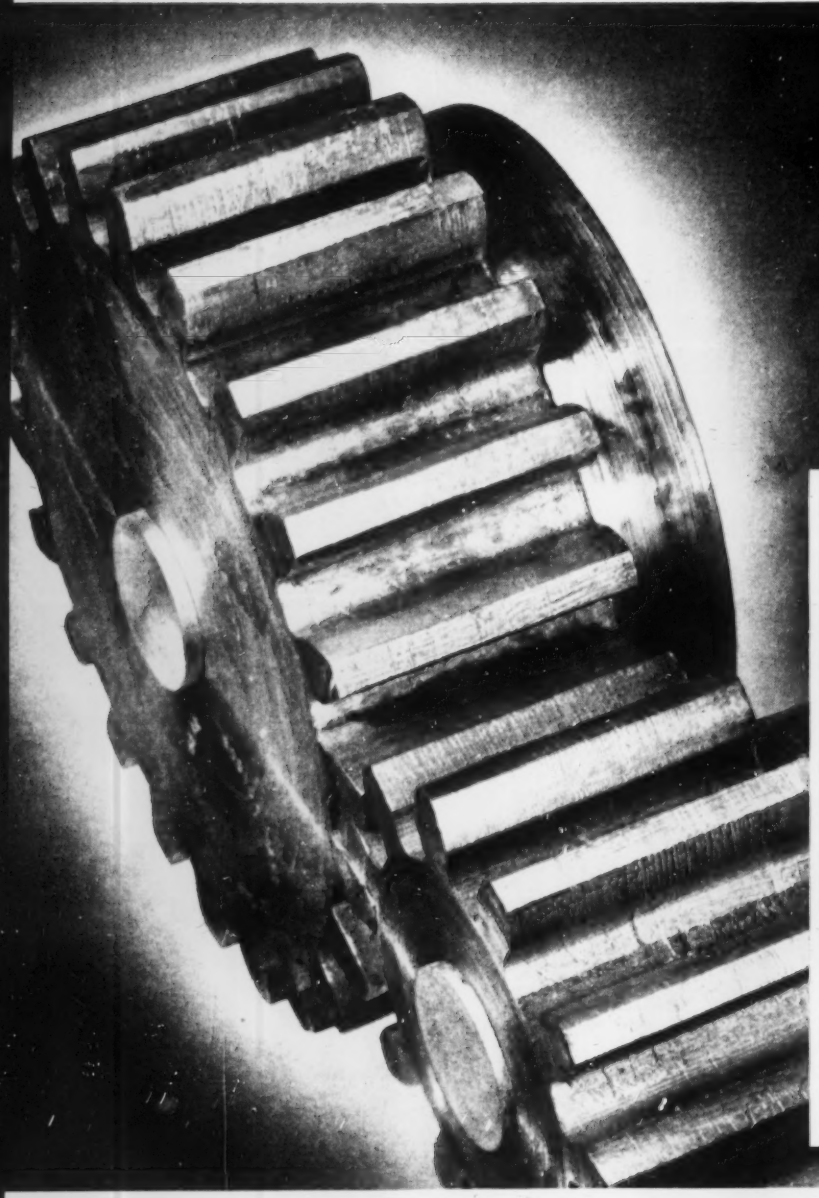
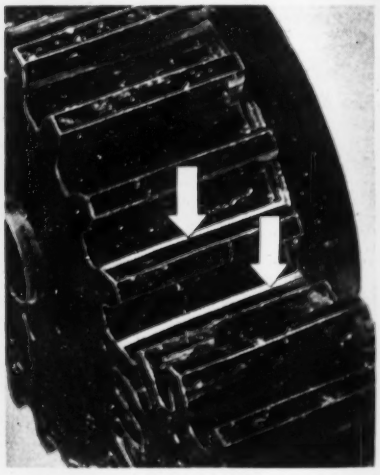




BLACK GEAR COMPOUNDS oxidize, harden and wipe off quickly under pressure. Arrows indicate where wipe-off of the compound has left the gears unprotected by a lubricant. Metal to metal contact causes excessive wear and thus materially shortens the life of gears.

NO SQUEEZE-OUT due to pressure. A thin, transparent film of Sun 897 Adhesive Pressure Grease stays evenly distributed on the gears and gives positive lubrication at all times. Sun 897 is water resistant and can be easily applied with a brush.

Men of Industry

ANGUS M. BROWN
. . . new duties at Lamson Corp.

DEAN W. PAUL
. . . General Dynamics div. sales mgr.

H. C. ALLINGTON
. . . V. P.—sales at CF & I

Angus M. Brown, manager of commercial sales, **Lamson Corp.,** Syracuse, N. Y., assumed additional duties as manager of the Billmyre blower division.

Charles E. Wilson, former president of General Electric Co., was elected chairman of the executive committee of the board of directors of **W. R. Grace & Co.,** New York. Mr. Wilson's association with the company began as a director and consultant early in 1952, following his 51 years with General Electric. In 1950, he was named head of the ODM.

R. M. Hollingshead Corp., Camden, N. J., named **Harold L. Danziger,** former assistant sales manager of the automotive private brand division, as manager of all private brand sales.

Armco Drainage & Metal Products Inc., subsidiary of Armco Steel Corp., Middletown, O., appointed two division managers. **Tom M. Neibling** is to be manager of the southwestern division, with headquarters at Houston. **William O. Robertson** was named manager of the eastern division, with offices in Baltimore.

Clifton C. Candee was elected vice president of the **Kinetic Dispersion Corp.,** Buffalo.

Dean W. Paul was appointed sales manager of the electro dynamic division of **General Dynamics Corp.,** Bayonne, N. J. He has been engaged in manufacture, sales and distribution of industrial electric motors for 14 years.

Calumet & Hecla Inc., Calumet, Mich., appointed two executives to new management positions. They are **Robert N. Bayless,** new director of management planning, and **Edward C. Ames,** director of employee and public relations. They will join the company Feb. 16.

E. P. Dunlaevy, vice president of Phelps Dodge Copper Products Corp. was elected to the board of directors of **G & W Electric Specialty Co.** of Chicago.

Three appointments were announced by **Caterpillar Tractor Co.,** Peoria, Ill. **L. C. Allenbrand,** manager of the merchandise department, was designated general manager of the York, Pa., plant. Factory manager of the plant will be **Hans Erich.** Taking Mr. Allenbrand's former position will be **Frank Bovenschulte.**

Emhart Mfg. Co., Hartford, Conn., named **Warren E. Hill** vice president in charge of operations, a new post. His activities will be with all Emhart operating units.

H. C. Allington was elected vice president in charge of sales of the eastern division of **Colorado Fuel & Iron Corp.** He will be located in New York.

At **Westinghouse Electric Corp.,** Pittsburgh, **Carroll B. Dick** was appointed manager of the Westinghouse electric micarta division, to be in charge of the micarta division plant at Trafford, Pa., and the Plywoods-Plastics Corp. plant at Hampton, S. C. Manager of the corporation's transportation and generator division at East Pittsburgh, Pa., is **P. C. Smith,** who was assistant to the manager before his promotion.

Donald E. Douglas was elected vice president of **Pacific Car & Foundry Co.,** Renton, Wash. He will continue as treasurer of the company and its subsidiary, Kenworth Motor Truck Corp., Seattle.

Paul Dye was named to the new position of general sales manager of **Admiral Corp.,** Chicago. He has been manager of distribution since 1948, having joined the company in 1946 as Admiral's midwest regional manager.

Robert C. Stolk, assistant manager of sales for the Pacific division of **American Can Co.,** San Francisco, was promoted to manager, to suc-

NATE WADE
. . . new Osco Steel post

EDWIN M. CLOSE
. . . purchasing agent at Hanson

RALPH W. SEELY
. . . Consolidated Western mgr.

ceed **Allen C. Staley Jr.**, who was appointed assistant general manager of sales. **C. W. Curry**, formerly sales division manager for the company's central division, will become assistant manager of sales in place of Mr. Stolk.

Nate Wade was made executive vice president at **Osco Steel Co.**, Cleveland. He had been general manager of the company's Detroit branch.

Gilbert C. Strege was appointed president of **Baker-Lull Corp.**, Minneapolis. The company changed its name from Lull Mfg. Corp. Mr. Strege was formerly manager of McBee Co.'s technical division in Milwaukee.

Walter E. Palmer, who joined **All-State Welding Alloys Co. Inc.**, White Plains, N. Y., in 1951, is now sales manager. Previously he was a regional manager of the company.

Edwin M. Close was appointed purchasing agent by **Hanson-Van Winkle-Munning Co.**, Matawan, N. J.

Chain Belt Co., Milwaukee, announced that **Bernard G. Schneider** will fill the newly created position of assistant chief engineer, conveyor equipment section of the company's conveyor and process equipment division. He had been manager of engineering services.

E. M. Richardson, formerly manager of eastern division sales, was designated general sales manager of **Nice Ball Bearing Co.**, Philadelphia. He joined the company in 1945 as a sales engineer.

Ralph W. Seely, vice president of **Consolidated Western Steel Division** of U. S. Steel Corp., was appointed general manager of the division under general direction of **Alden G. Roach**, president. His offices will continue to be in Los Angeles.

Dr. Cyril G. Veinott joined **Reliance Electric & Engineering Co.**, Cleveland, as consulting engineer on A-C machinery. Formerly, he was with Westinghouse Electric Corp.

Detroit Steel Products Co., Detroit, advanced **David S. Burnett** to sales manager of the automotive division. He succeeds **Samuel P. Hess** who is retiring after 40 years' service.

New general superintendents of U. S. Steel Corp.'s **American Steel & Wire Division** works are **Wade B. Houk** and **Umbert F. Corsini.** Mr. Houk was named general superintendent at the division's South Works, Worcester, Mass. Mr. Corsini was appointed to a similar position at the Steel & Wire Works in Donora, Pa.

Robert S. Solinsky was elected president and a director of **National Can Corp.**, New York. He succeeds **C. L. Thompson**, who continues as board chairman.

Clark E. Center was made vice president of **Carbide & Carbon Chemicals Co.**, in charge of atomic energy work at Union Carbide & Carbon Corp., New York. He succeeds **George T. Felbeck**, who will work on engineering problems of the corporation.

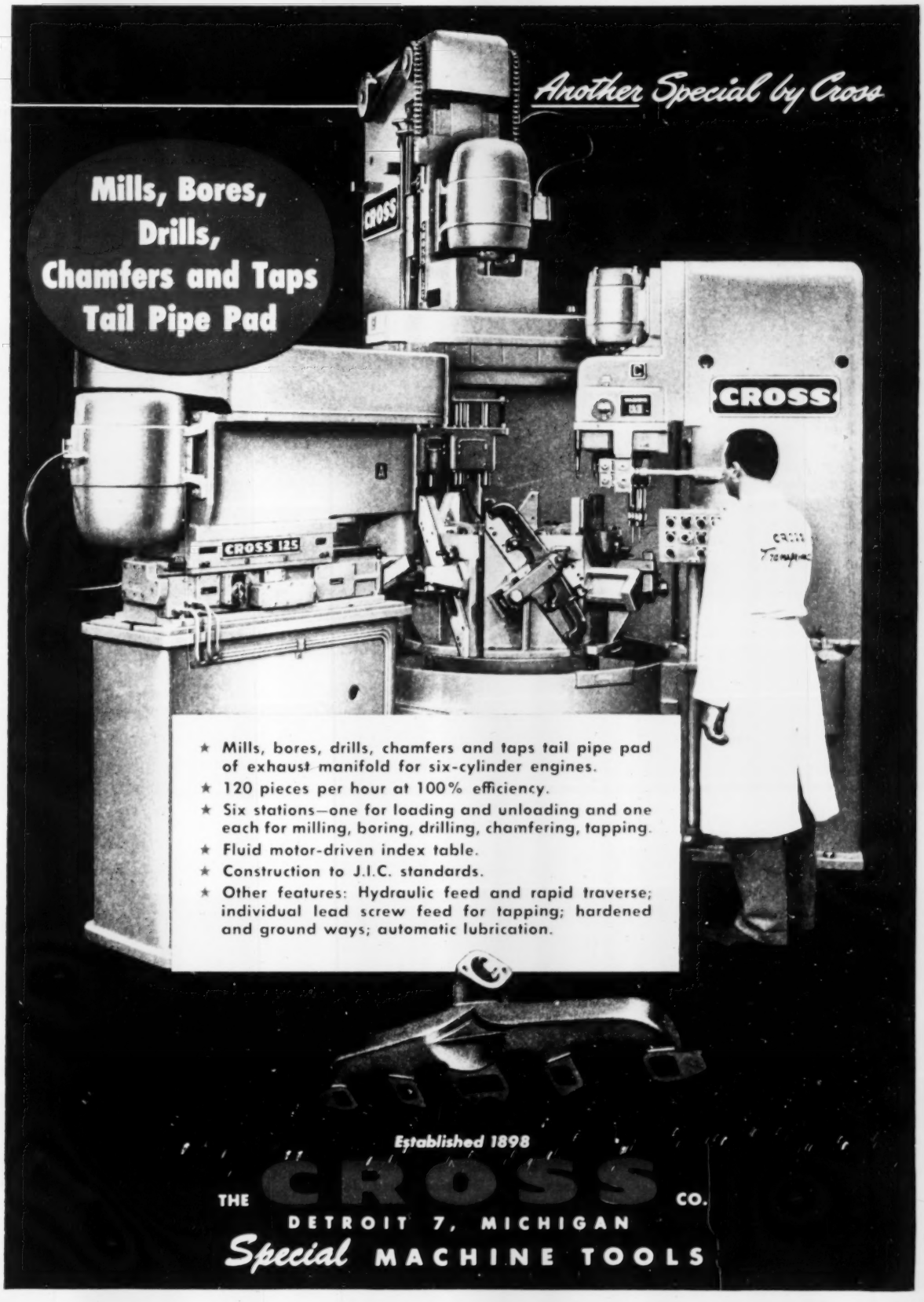
M. Denis Kendall, executive vice president of **Brunswick Ordnance Corp.**, a subsidiary of Mack Trucks Inc., was appointed vice president of **Mack Mfg. Corp.** to assume responsibility for all manufacturing at Mack plants. His headquarters will be in Allentown, Pa.

Appointments at **Allis-Chalmers Mfg. Co.**, Milwaukee, result in **Arthur F. Erwin** and **Edward F. Brill** becoming manager and chief engineer, respectively, of the atomic power section. At the same time, **J. T. Graham**, a resident representative in the Jacksonville, Fla., office of Allis-Chalmers general machinery division, was advanced to manager there.

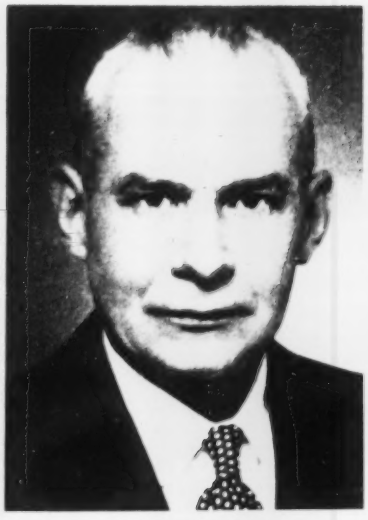
Cleveland-Cliffs Iron Co., Cleveland, elected **Raymond J. Wean**, president and director of the Wean Engineering Co., Warren, O., as a director of Cleveland-Cliffs. He succeeds the late **W. H. Gerhauser.**

James B. Clow & Sons, Chicago, elected **William E. Clow Jr.** chairman of the board and **John Madden** president. The company also appointed **G. R. Kinnally** general manager of the jobbing division.

At **Kaiser Steel Corp.'s** Fontana, works, Fontana, Calif., **Gordon A. Zwissler** was made division superintendent, rolling. **C. A. MacIlvaine**


Another Special by Cross
Mills, Bores, Drills, Chamfers and Taps Tail Pipe Pad
CROSS
CROSS 125
★ Mills, bores, drills, chamfers and taps tail pipe pad of exhaust manifold for six-cylinder engines.
★ 120 pieces per hour at 100% efficiency.
★ Six stations—one for loading and unloading and one each for milling, boring, drilling, chamfering, tapping.
★ Fluid motor-driven index table.
★ Construction to J.I.C. standards.
★ Other features: Hydraulic feed and rapid traverse; individual lead screw feed for tapping; hardened and ground ways; automatic lubrication.
Established 1898
THE CROSS CO.
DETROIT 7, MICHIGAN
Special MACHINE TOOLS

H. J. ZILSKE
. . . promoted at Hydraulic Press



JAMES M. WHITE
. . . V. P.—American Car & Foundry

BURTRON ZOOK
. . . sales mgr., Jensen Specialties

was appointed assistant to controller of the corporation, and **Reynold C. MacDonald** became superintendent of the blooming and structural mills of the Fontana works. **Robert H. Olsen,** division manager of works accounting was appointed assistant controller at Fontana.

Hydraulic Press Mfg. Co., Mt. Gilead, O., promoted **H. J. Zilske** to chief engineer of the hydraulic power division. He has been with the power division three years.

Appointments at **Westinghouse Electric Corp.**, Pittsburgh, include **W. R. Sugg Jr.** as assistant manager of the transportation and generator division, and **G. A. Moore** as manager of manufacturing.

Alvis M. Cole was made manager of quality control at the **Ford Motor Co.** assembly plant in Buffalo. He succeeds **Edward J. Young,** who will be manager of quality control at the Ford aircraft plant in Chicago.

James M. White was elected vice president in charge of manufacturing at **American Car & Foundry Co.**, New York. He succeeds **Robert W. Ward** who retires.

John H. Wintersteen, advertising manager for **Kaiser Steel Corp.**, with headquarters in Oakland, Calif., transferred to Bristol, Pa., where he will assume a new position as manager of public relations and advertising for Kaiser Metal Products Inc.

American Locomotive Co., Schenectady, N. Y., designated **Alexander Ross** as chief engineer and **H. R. Sennstrom** as executive engineer.

White Motor Co., Cleveland, named two branch managers. **Earl H. Lewis** is the Philadelphia branch manager, after managing the company's sales training program in Cleveland during the past year. **E. S. Hoke** is to be manager of the Cleveland branch. Formerly he was assistant to the vice president in charge of sales.

Burtron Zook was appointed sales manager for **Jensen Specialties Inc.**, Detroit, to supervise industrial ovens and heating equipment. **Paul H. Goodell,** sales manager for three years, will be retained in a consulting capacity.

John W. Scallan, vice president in charge of midwestern sales at **Pullman-Standard Car Mfg. Co.**, Chicago, was named vice president and general manager.

P. R. Mallory & Co. Inc., Indianapolis, promoted **George S. Bond** to sales manager of its metals and ceramics division. He previously was chief engineer of that division.

OBITUARIES...

George G. Thorp, 84, former president of **Illinois Steel Co.**, died at Madison, Wis., Jan. 19. He supervised the design, construction and operation of the Gary, Ind., steelworks now owned by U. S. Steel Corp.

J. Howard Van Sciver, 65, former president of the **Bethlehem Foundry & Machine Co.**, Camden, N. J., died at Miami Shores, Fla., Jan. 18.

Fred Mackwirth, 73, founder of the **Georgen - Mackwirth Co.**, Buffalo, and later associated with **Buffalo Forge Co.**, died Jan. 20.

P. J. McAuliffe, 45, purchasing agent for the Orange, Tex., plant of U. S. Steel Corp.'s **Consolidated Western Steel Division,** died Jan. 8. A native of New Orleans, he resided in Beaumont, Tex.

Charles H. Palmer, 86, retired vice president and sales manager of **National Screw & Mfg. Co.**, Cleveland, died Jan. 19.

Frank H. Elsinghorst, 64, owner and operator of **Elsinghorst Bros. Co.**, Buffalo, died Jan. 20.

Frank O. Humberger Jr., president and treasurer of **Massillon Steel Casting Co.**, Massillon, O., died Jan. 20.

Arthur W. King, 69, industrial specialist with **Briggs Mfg. Co.**, Detroit, died Jan. 18.

5 MINUTES PER PIECE WITH THIS VERSATILE NEW CH MILLING MACHINE

Speeds fabrication of aircraft parts from 75ST aluminum alloy

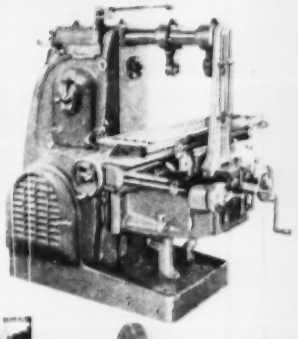
HERE ARE THE FACTS ON THIS JOB:

Location:	Mar Vista Engineering Co., Los Angeles, Calif.
Machine:	5 hp, No. 2, Model CH, Plain Style used with Universal Milling Attachment.
Part:	Aircraft fitting for horizontal stabilizer.
Material:	75ST aluminum alloy.
Cutter:	One blade — 8" fly cutter.
Cutter Speed:	875 rpm, 9 ipm feed.
Depth of Cut:	.050".
Production:	12 pieces per hour — all sides milled.

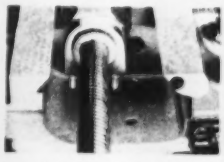
INVESTIGATE the versatile new CH line of milling machines. Their features are job proven to give you cost-cutting results plus greater productivity, better finished products. Contact our nearest representative or write: Kearney & Trecker Corp., 6784 W. National Avenue, Milwaukee 14, Wisconsin.

KEARNEY & TRECKER MILWAUKEE MACHINE TOOLS

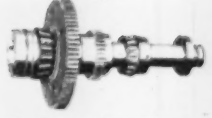
CH MILLING MACHINE FEATURES THAT HELPED INCREASE OUTPUT — CUT COST PER PIECE



5 hp No. 2 MODEL CH Plain Style Milling Machine.



Smoother feed performance through a heavy duty 2" dia. table feed screw. 28% greater bearing contact between screw nut for longer screw life and accuracy.



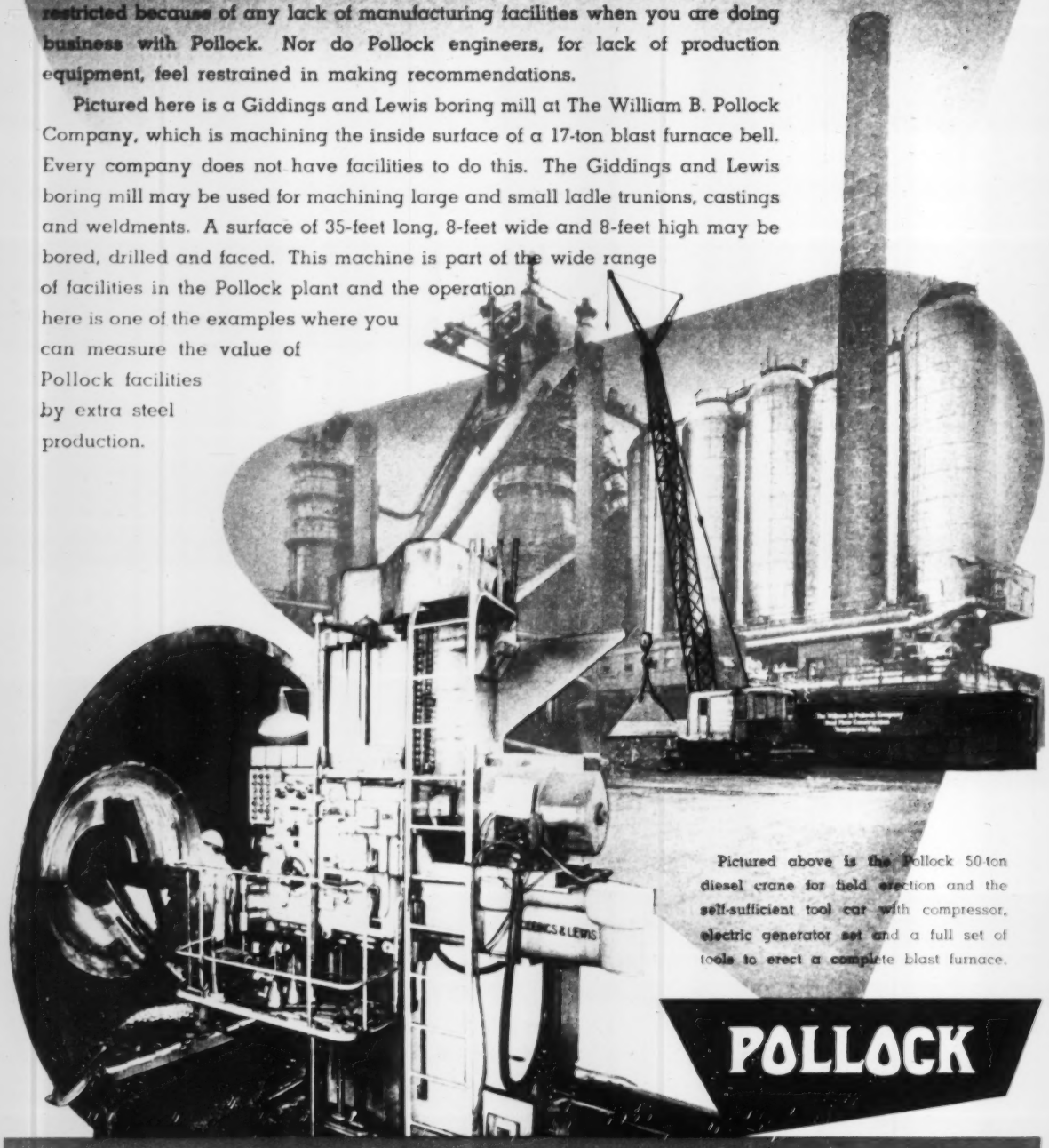
Greater cutting efficiency — design refinements in 3 bearing spindle and a train of heavy duty, wide-faced, forged steel gears, hardened and specially processed.

Speed range—16 speed changes are provided from 25 to 1500 rpm. *Extra-wide feed range*—16 changes from ¼" to 32" per minute meet requirements of new metals and cutting tools.

POLLOCK facilities encourage higher specification standards in steel construction

Your progressive ideas for blast furnaces and steel plants are not restricted because of any lack of manufacturing facilities when you are doing business with Pollock. Nor do Pollock engineers, for lack of production equipment, feel restrained in making recommendations.

Pictured here is a Giddings and Lewis boring mill at The William B. Pollock Company, which is machining the inside surface of a 17-ton blast furnace bell. Every company does not have facilities to do this. The Giddings and Lewis boring mill may be used for machining large and small ladle trunions, castings and weldments. A surface of 35-feet long, 8-feet wide and 8-feet high may be bored, drilled and faced. This machine is part of the wide range of facilities in the Pollock plant and the operation here is one of the examples where you can measure the value of Pollock facilities by extra steel production.



Pictured above is the Pollock 50-ton diesel crane for field erection and the self-sufficient tool car with compressor, electric generator set and a full set of tools to erect a complete blast furnace.

POLLOCK

THE WILLIAM B. POLLOCK COMPANY • YOUNGSTOWN, OHIO

STEEL PLATE CONSTRUCTION · ENGINEERS · FABRICATORS · ERECTORS

Production AND Engineering NEWS AT A GLANCE

HARD TOP—Malcomizing, developed by Lindberg Engineering Co., produces a superhard surface by the action of nitrogen with steel surfaces. The process takes advantage of the chromium in the various grades of stainless as the hardening element, thus forming a hard, wear resistant surface without seriously affecting the corrosion resisting properties of the steel. Dimensional changes due to the treatment are kept at a minimum because of the low temperature used.

WORKING EXHIBIT—Sometimes visitors to various metalworking shows lose sight of the practical value of the equipment exhibited in the maze of gimmicks and smiling blonde models. An example of the practical value of the products exhibited occurred at the recent Plant Maintenance Show. Engineers from Uddeholm Co. of America witnessed a demonstration of a Sperry Reflectoscope and decided that this ultrasonic inspection device would provide the answer as to whether a 90-pound piece of air hardening tool steel that was ready to be shipped to a customer would meet the requirements set. The test was conducted in the Sperry booth at the show, found in excellent condition and shipped.

CONVEYORIZED PRESSING—To overcome problems of idle press time and a high degree of operator fatigue, North American Aviation built a mechanized conveyor to tie in with its 2000-ton Birdsboro rubber pad forming press. Eight buttons or plates carry parts under the press ram and are serviced by four operators. Proof of the set-up's effectiveness is a 48 per cent increase in production. p. 100

PROTECTS ALUMINUM—An amorphous mixed oxide-chromate coating on aluminum and its alloys, gives protection to unpainted surfaces and also provides a good paint base. Parker Rust-Proof Co.'s Bonderite 710 produces this coating by spray, dip or brush application. The coating is thin, dense and iridescent to golden brown in color depending upon the aluminum alloy. It is flexible, can be arc and spot welded, produces no appreciable change in dimensions and has good resistance to galvanic corrosion. Tests show that it surpasses requirements of Mil-C-5541 specification. It is being used on sheets, castings, forgings, extrusion and structural aluminum parts.

IT'S GOT TO PAY—A warning to manufacturers of nondestructive testing equipment is issued by an executive of a leading manufacturer in the field. Too often experts in the field talk about the things their equipment will do in the scientific sense without any mention of how it can effect savings at the plant using it. That the process can more than pay its way is pointed up in examples involving various production processes. Savings result from using nondestructive testing to check incoming material, to start a new process on the right track, to keep the process producing acceptable parts, to pinpoint trouble spots and for final inspection. p. 104

BARGAIN IN TIME—Machining time cut by 75 per cent—that's what happened when the new Roll Contouring Machine of R. K. Le Blond Machine Tool Co., Cincinnati, went to work in U. S. Steel's Clairton Works. LeBlond demonstrators, with no roll-turning experience, did a job formerly turned out at 52 hours in just 13. New lathe has hydraulic contouring arrangement which permits turning, instead of plunge-forming, the roll diameter. When machine is not working on rolls, it can perform all the work of a standard engine lathe including threading.

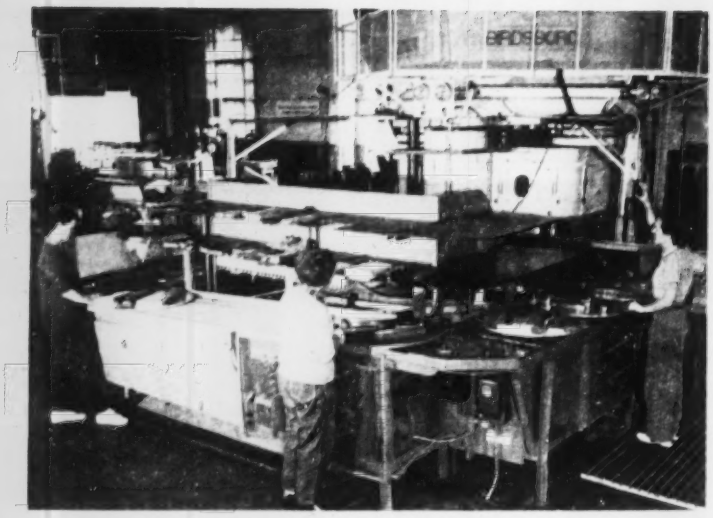
MIGHTY MIDGETS—Electric motors small enough to fit into a watch pocket are being produced to military specifications by Connecticut Telephone & Electric. They are classed among the smallest and most powerful electric motors ever manufactured. Two models are available to maintain exact speeds of 8000 and 12,000 rpm.

STRAIN AGING FACTS—Experiments in Philips Research Laboratories with carefully prepared alloys containing only carbon or nitrogen as impurity showed that even after 40 hours heating at 50 C, carbon does not cause any strain aging, whereas nitrogen as impurity shows maximum effect after two hours heating. As far as strain aging is concerned, manganese does not affect the behavior of nitrogen, an unusual phenomenon, considering that quench aging is greatly influenced by manganese.

TINY SPARE PARTS—A spare parts compartment in Clebar stopwatches and timers is a new Swiss contribution. Seven precision watch parts are contained in the tiny compartment that comes complete with plastic lid. Repairs are simplified since any local jeweler can qualify as a repair station with the float of repair parts on hand.

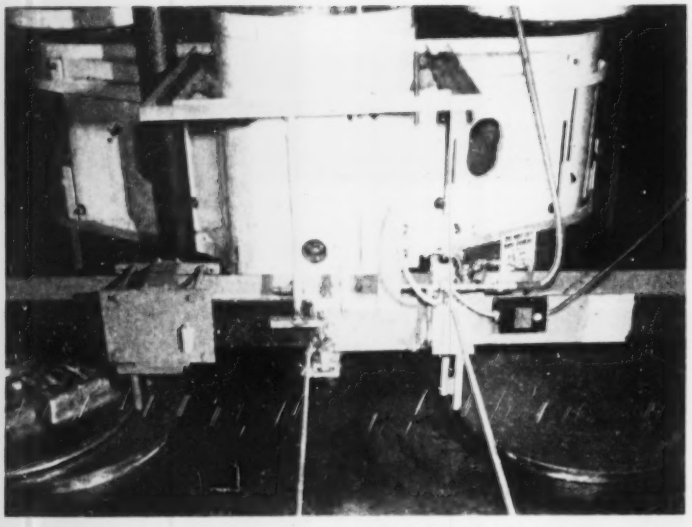
COMING AND GOING—Drawing a cartridge case to a length of 24 inches ordinarily requires a long return stroke and reduces the amount of working time in the press cycle. A press that works in both directions overcomes this difficulty and has other benefits including reduced equipment cost. Clearing Machine Corp. built the press for Rheem Mfg. Co.'s New Orleans plant. Requiring no foundation pits, the press is specially suited to the plant location since soil conditions at the site are unstable. p. 122

Metalworking Outlook p. 63 *Market Outlook p. 167*



General view of the conveyor in front of the press shows the front belt conveyor and, at right, the gravity-feed load side. Eight circular plates or buttons are used

Conveyor Boosts Press Operations



Two of the three platens are in position for loading, at right, and unloading. Fingers push die-carrying buttons on and off. Third platen is under press ram

Conveyor speed is synchronized with speed of press cycle. Increase of 48 per cent in total production, less operator fatigue and safer working conditions are advantages

CONVEYORIZING one of our rubber pad forming presses resulted in a 48 per cent increase in total production at North American Aviation Inc., Los Angeles.

The press is a 2000-ton Birdsboro three-column hydraulic. The only one of its kind, it was originally built for Convair, during World War II for rubber forming.

New Container—It has a 10-foot diameter indexing plate which is indexed for three positions. This revolving table carries the unformed blanks beneath the rubber container mounted on the press ram.

To parallel North American's high-pressure rubber forming program, a 30-inch diameter container developing 5651 psi was designed for use in the press.

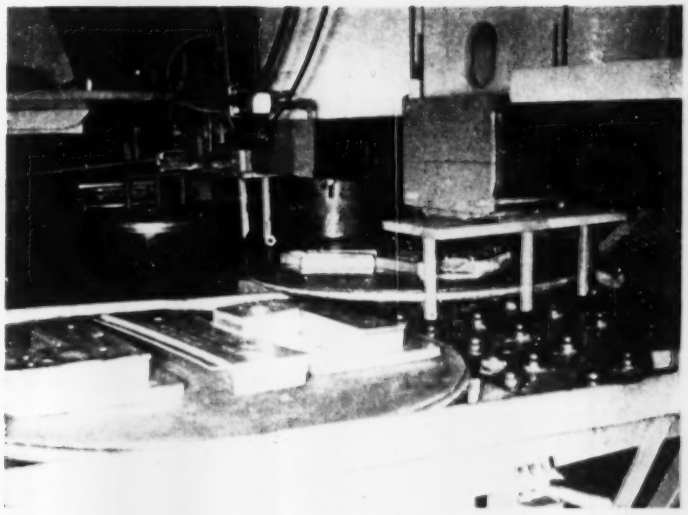
The Reasons—Two big problems showed up in the operation of the press. First, because of the amount of time required to change parts on their individual dies, there was no continual cycle of operation. Second, as a result of the long reach required of the operators in removing various parts from the dies, a surprisingly high degree of operator fatigue showed up.

To overcome these problems of idle press time and employee fatigue we developed and built the mechanized conveyor. This conveyor still utilizes the 10-foot circular indexing plate, but we added 1½-inch thick by 30-inch diameter plates called buttons.

These buttons plus existing steel platens made possible removal of several dies at once from the indexing plate to a position where parts could be changed by operators.

The Go-Around—A three-sided rectangular conveyor is placed in front of the press, connecting two of the three indexing positions for the buttons to move upon.

By LYLE BOARTS
Foreman
and
EUGENE SEARCY
Assistant Foreman
Machine Forming
North American Aviation Inc
Los Angeles



Fingers in foreground pull loaded button onto platen. As revolving table indexes, button will be fed under the ram. In background, fingers unload formed parts

When the operator pushes the start button he energizes the indexing plate and it revolves in a counter-clockwise direction. This moves the steel platen and button carrying dies to the forming position under the press ram.

Advance—The preceding button is moved from under the ram to the unload position. The platen which was in the unload position is moved to the spot. As the indexing plate reaches its position the press ram decends automatically.

Cam arrangement attached to this ram makes contact with an impulse switch which actuates a Bellows Power Dome double-acting air cylinder mounted over the load and unload positions.

Fingers—This cylinder mounted to the underside of an H-beam has fingers at each end extending downward. As the cylinder is actuated these fingers pick up the button from the conveyor load position and pull it onto the revolving indexing plate. At the same time fingers at the opposite end of the beam push formed parts on the other button off the unload position onto the conveyor.

As the button comes off the indexing plate it is gravity fed down the first leg of the conveyor and is stopped at the bottom by an air cylinder. Here, formed parts are removed from their dies. As the brake is actuated by an air valve mounted at the base of the ram, it is timed to allow only one button to pass through. This gives uniform spacing to the buttons as they come onto the front conveyor leg.

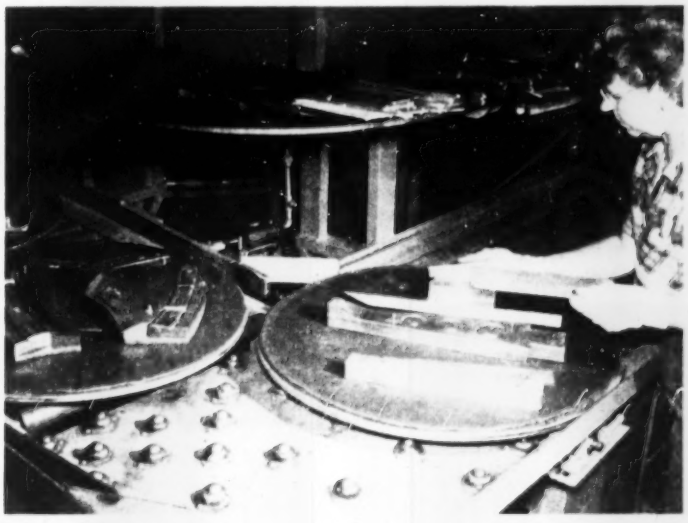
Synchronized—Front leg of the conveyor is a belt-type unit powered by a vari-drive. This type was used so the conveyor could be adjusted to the press speed.

As the buttons are picked up by the belt conveyor they are moved slowly up an incline while the operators place unformed blanks on the dies.

Advantages—When they reach the top of the incline the buttons are again gravity fed on the third leg of the conveyor. Another air-operated brake at the bottom of this leg releases a loaded button once each cycle and allows it to advance to the pull-on position.

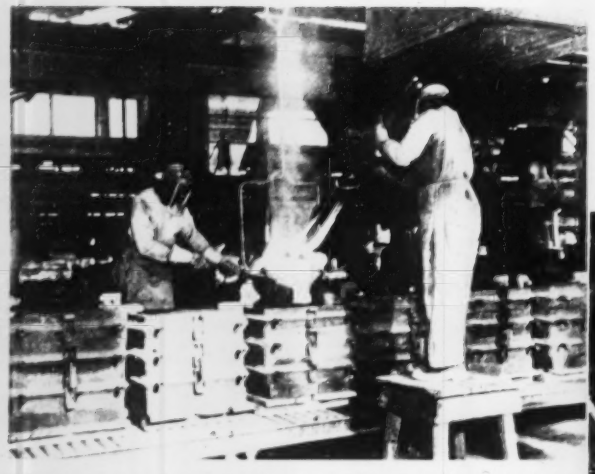
After repeated studies, it was found that eight buttons with four operators would maintain a continuous flow of unformed parts to the press so the maximum number of ram hits could be obtained.

Advantages in the new system are: Safer working conditions with employees working away from the ram, decreased employee fatigue with shorter reaches for the workers and a 48 per cent increase in total production.



As buttons start up the front belt conveyor, operator places blanks on the dies. Air-actuated brake at center allows one button per machine cycle to feed through

Foundry Facilities



When pouring brass castings, molds of a similar size are grouped together so difference in pours can be gaged to eliminate excessive amount of leftover metal

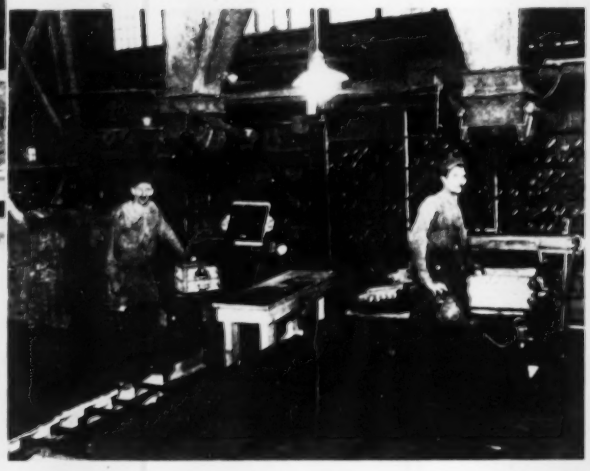


Plate patterns are stored right at the molding machines. If large or rush orders are required, several patterns can be made and a like number of machines put into service

With squeezer machines molding both halves of the mold at the same time and a few other changes in their facilities, this company stepped up deliveries 220 per cent

FASTER DELIVERIES and lower prices provide two big advantages of altered casting facilities at Baldwin-Lima-Hamilton Corp., Philadelphia.

Regrouping its small iron and brass casting facilities and adding to the squeezer and roll-over molding-machine lines has enabled the company to increase its capacity particularly for small and medium-sized castings up to 1500 pounds.

Wide Assortment—In this line, 110 brass and 20 iron alloys are available. Among the former are high-strength manganese bronzes, aluminum bronzes, silicon bronzes and nickel-tin bronzes. The 20 iron mixes include alloys of nickel, chromium, molybdenum and copper. Also available is a selection of heat and acid resisting irons.

At the center of the mechanized molding setup are the iron cupola and brass furnaces. Around these the sand mixing and distributing equipment to feed the various bays containing the automatic molders is arranged.

The squeezers, for small casting molds (50 pounds and under), are

Squeezer machines produce molds ready for pouring. Plate separates pattern halves—complete mold is squeezed at once. Top half is lifted off, plate removed, halves mated, removed from flask

Molded to Production

arranged two in a bay in line with the roll-over machines.

Split Halves—The roll-over machine and a pin-lift molder constitute a unit for making molds of castings weighing up to 1000 pounds. Increased production speed is obtained by molding the drag on the rollover and the cope on the pin machine.

When completed the two sections are in position to be clamped together and placed on the pouring conveyor. Six roll-over and eight squeezer machines are installed. Other roll-over machines are available for making castings up to 2000 pounds.

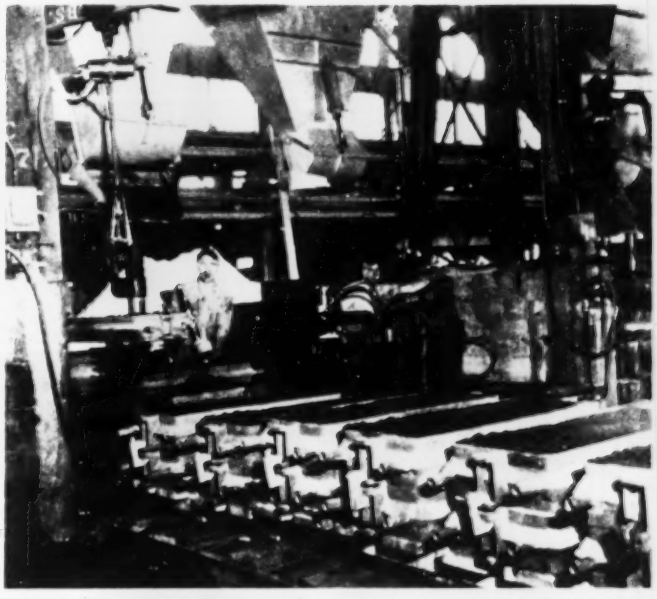
Stays Hot—Coming from the machine bays the molds converge on a central pouring area convenient to the cupola and brass furnaces. Molten metal is delivered directly to the molds in a preheated ladle.

Because of well-arranged equipment, time consumed in the pouring operation is so short that the metal reaches the mold at near the tapping temperature.

Less Per Pound—Baldwin officials feel the new arrangement gives maximum advantage of the automatic sand mixing and handling equipment by speeding up the molding and pouring operations. They report casting deliveries have been speeded up 220 per cent. Another advantage is that casting prices have been lowered as much as 5 cents a pound.

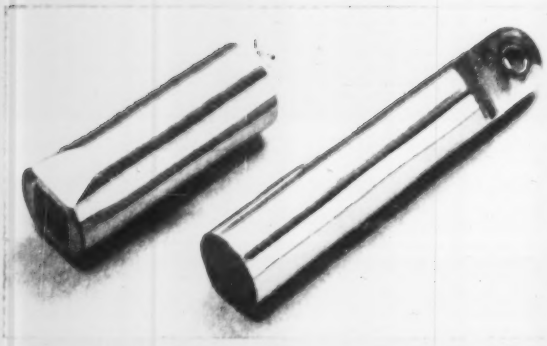
Aside from faster deliveries and lowered prices, the method shows up other advantages. It eliminates the human element in sand ramming. It assures more constant pouring temperature, reduces the chance of casting porosity and gives more uniform grain structure.

Uniform machine-packed molds with engineered gates and risers and better control of pouring temperature add up to faster deliveries and lower prices. Rigid inspections assure high quality of the castings.

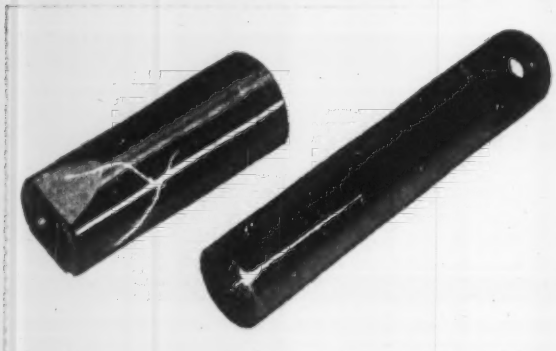


Pin machine, left, and roll-over, right, operate as a unit to produce both halves of the mold. After being molded in roll-over, lower half moves to pin machine where top half if fitted in place

Molded on the squeezer machines, these plug-valve bodies are made in a variety of sizes and require little machining. Close control of sand mixtures provides castings with smooth surfaces



Aircraft parts shown above after finishing are an example of wasted man-hours and money. Under black light heat treat cracks and seam are visible



TESTING BRIGHTENS PROFIT PICTURE

Selling nondestructive testing to management requires economic justification. Accurate cost figures are needed to show the real value of these operations in boosting earnings

By W. E. THOMAS
Vice President
Magnaflux Corp.
Chicago

INTELLIGENT industrial management doesn't employ any process unless it more than pays its way, except when that process is forced upon it by outside pressure.

People in nondestructive testing tend to tell themselves how wonderful the methods are developed in their field, talk proudly of efforts to develop greater ability to use these developments and enjoy describing new equipment designed to do new things. Far less frequently is any consideration given to the dollars and cents reasons why industry buys the testing machine. Thinking is usually along the lines of what nondestructive testing can do more than why it is of value that it be done. Yet that why is of the utmost importance and management weighs it in the balance with dollars as the standard.

Basic Requirements — Nondestructive testing is used either to reduce production costs, or losses, or else it is used to assure serviceability of the product. It often is used for both reasons, because service requirements determine the acceptable quality level, which dictates the degree of control of manufacturing processes needed to keep the quality acceptable at lowest cost. The inspection to obtain lowest cost manufacture reaches back to receiving inspection to casting or forging control, or even farther back to the inspection of billets and rolled stock.

This leads directly to the justifying economic balance for any inspection: Is the cost of late rejection or failure of parts greater than the cost of inspection by nondestructive testing methods needed to control the critical defects? If so, the test is fully justified.

Consider some of the more complex problems encountered in the manufacturing industries.

Like Dimensioning — Inspection is conducted to certain specifications. All specifications must include a tolerance, because absolute perfection is seldom if ever attained, and is more by accident than by design. In dimensional inspection these tolerances are expressed in parts of an inch, above or below the nominal size.

In radiography, for example, a specification may be expressed as, "Minor scattered porosity acceptable, no shrinks or cracks allowed." The tolerance is expressed in a form as understandable to the foundryman and the radiographer as the thousandths of an inch are to the dimensional inspector.

Determine Cost — Standard and the tolerance are most important in the manufacturing cost of any product. The designer wants to specify a tight tolerance—the production man wants to work to "loose" tolerances—management

wants something in between. The ideal tolerance from management's viewpoint is at the point of maximum value added by the manufacturing process. It is to that tolerance that inspection specifications should be written.

Another approach could be made to determine where nondestructive testing is used in industry, and then to learn why it is used in those locations. Accepting the premise that the one and only reason for nondestructive testing is to save money, then the reason why these methods are used is the determination of the economic saving.

Check Points—Some of the common paths of steel from the source of raw material through its preliminary fabrication; its finishing processes, its salvage and its service life are illustrated. All operations are not covered nor products shown, yet the picture is typical of much of our metalworking industry.

For example, steel is produced in the mill and shipped to customers as billets, bars, plate, pipe, etc. Depending upon the end product and the quality demanded of it, each of those products receive more or less inspection. In this chart the large dots indicate some of the locations in the flow of production where inspection operations are being performed.

Each plant inspects raw material. Each inspects final production. Each attempts salvage operations, and then inspects to see that the product has been brought within acceptable standards. Not all of it can be saved and there is scrap material. Fortunately there is one customer for that scrap, and back to the mill it goes, though at a considerable loss.

Industry is full of operations which are wonderfully designed to improve materials—and which can, at the same time, spoil it. We inspect to look for this spoilage, but do it for many reasons.

Positive Tack—These reasons are not merely to reject the bad parts and sell them back to the mill—though one would think that that was the first and last reason from observations in many shops. That is a negative philosophy. A positive approach is based upon saving money—yes, and upon making money. This must be thoroughly worked out to be accepted by management and inspection personnel, and put into practice.

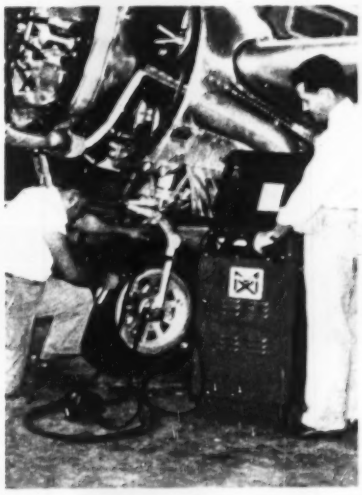
Of considerable help in this endeavor can be the cost accountant, though his help is seldom enlisted. We sometimes see the cost man estimate the cost of performing inspection operations. We seldom see him obtaining statistics on the values of those operations. Cost versus value is the key item.

The inspector is often faced with the problem of determining the economical justification for inspection of raw or semifinished material. Management may not be aware of the actual production savings which can be earned by early inspection.

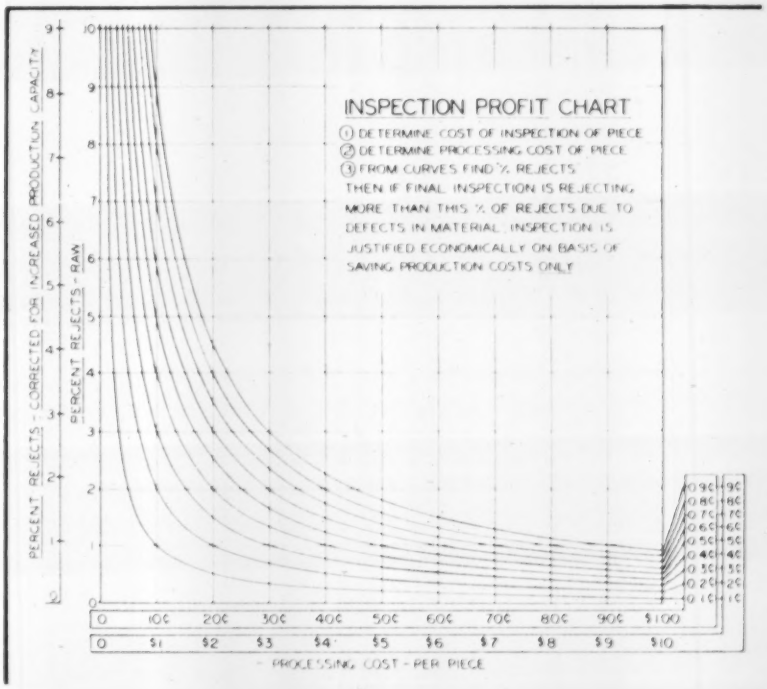
Paying Its Way—The economic justification of raw or semifinished part inspection is based upon either or both of the following reasons: 1. Saving the cost of processing defective material, only to be later rejected in final inspection. 2. Various advantages giving increased production if the final inspection scrap percentage is reduced to a minimum.

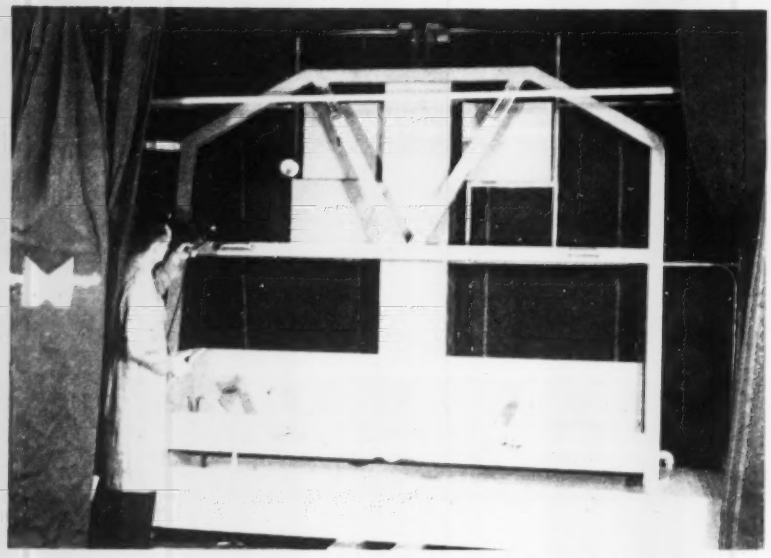
If inspection cost is only a cent or two per piece, and the cost of further processing is several dollars each, and the final rejection rate due to defects in the material or improper initial processing is several per cent, then it is obvious that preprocessing inspection is worthwhile.

Again, if this several per cent of scrap found in final inspection had been satisfactory for sale, then there are obvious dollar advantages in eliminating the scrap, and in-



Preventive maintenance in the field is increasing. Portable units are used on plant conveyors, mining equipment or on jobs like this one checking landing gear to avoid part failure in service


INSPECTION PROFIT CHART
① DETERMINE COST OF INSPECTION OF PIECE
② DETERMINE PROCESSING COST OF PIECE
③ FROM CURVES FIND % REJECTS
THEN IF FINAL INSPECTION IS REJECTING MORE THAN THIS % OF REJECTS DUE TO DEFECTS IN MATERIAL, INSPECTION IS JUSTIFIED ECONOMICALLY ON BASIS OF SAVING PRODUCTION COSTS ONLY
PERCENT REJECTS - CORRECTED FOR INCREASED PRODUCTION CAPACITY
PERCENT REJECTS - RAW
0 10¢ 20¢ 30¢ 40¢ 50¢ 60¢ 70¢ 80¢ 90¢ $1.00
0 $1 $2 $3 $4 $5 $6 $7 $8 $9 $10
PROCESSING COST - PER PIECE



Typical large jigging type unit for inspecting special ordnance, aircraft and marine parts. Tank turret bearings are mounted on rollers and quickly inspected for crack-like defects that would cause turret failure in service

creasing the sales of the company and the profits on those additional sales.

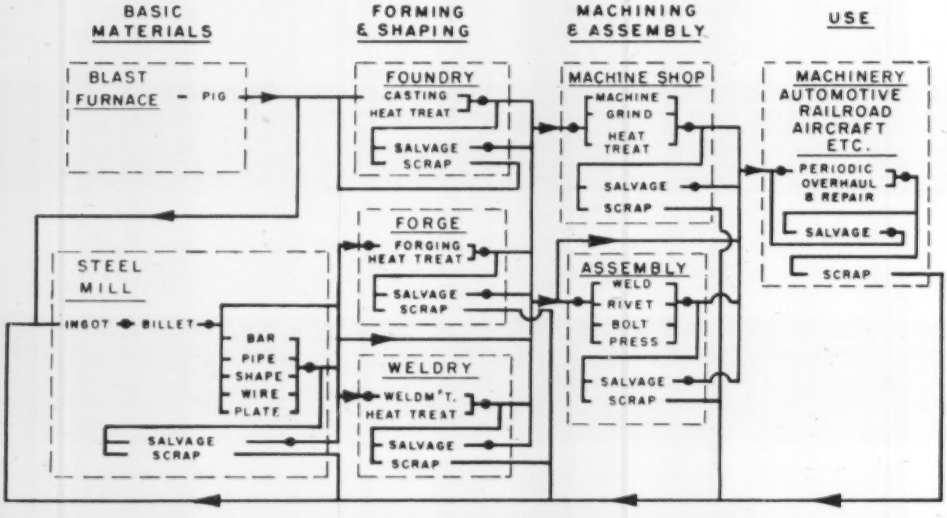
Down to Cases—This relationship of inspection cost to processing cost to percentage of final rejects is illustrated in chart form. For example, if inspection cost of a semifinished part is 1 cent each, and if $1 is to be spent in finishing each piece, then we see that if 1 per cent of the final product is rejected the cost of earlier inspection would have been equal to the processing cost saved. If 100 parts were processed without previous inspection, then $100 would have been spent on their processing and 1 per cent scrap of finished parts would result in a loss of $1 of processing cost.

Inspection before this processing, at a cost of 1 cent per piece would have cost a total of $1 or the same amount of the production cost saving. From this illustration it can be seen that if these curves are used, to find a point by comparing the processing cost per piece with the percentage of finished part rejects which is being experienced. If it is found that that point lies above the inspection cost curve, the inspection operation performed before production will make money for the plant.

This illustrates the No. 1 saving listed above. However, it does not take into consideration the additional earnings for the company due to the corresponding increase of production capacity of the plant making saleable products, when final scrap percentage is eliminated by preproduction inspection.

The accompanying table illustrates this increase in production

MANUFACTURE AND USE OF TYPICAL METAL PRODUCTS



Flow sheet tracing path of pig iron and steel from its mill source through various steps in finishing. Large dots indicate some inspection locations

assuming a loss of 5 per cent due to bad raw material:

Line A in the table shows the results of no raw material inspection and the rejection of 50 completed pieces out of a quantity of 1000 manufactured. The production cost of these parts was lost. In line B these 50 defective parts were rejected before production and 950 good parts were manufactured and sold.

Peak Production—However, the goal of every production man is to obtain as many finished parts as his shop can produce. If our hypothetical shop can produce the 1000 pieces as shown in line A, then 1000 good pieces should be passed on to production. A sufficient excess is therefore inspected prior to production in line C and the total capacity of the plant utilized efficiently. The maximum number of good parts can then be sold.

If both the saving and production cost and the increase in the number of good parts produced and sold are considered, then the percentage scale in the chart labeled, "Percentage Rejects Corrected for Increased Production Capacity", is the scale which should be used to determine the break-even point or the percentage above which it is economical to inspect the raw material.

To the Point—Two other questions are important in determining the use of economical inspection. At what places in the production sequence can it be profitably employed, and why so.

Some of the locations at which inspection is performed, and the reasons why it is economical to do so are listed in the table on the following page. These are the where's and why's of inspection.

Everybody Does It—Everyone performs some inspection on incoming material. The first where shows the reasons for inspection at this point. The purchaser is always interested in maintaining a quality control check on his supplier and he saves money by returning defective material as soon as it is received. Sometimes the cost of inspection of an entire lot may be accepted as a charge by the supplier if there is an unusual number of defective pieces.

Another reason for inspecting incoming material is interesting, in evaluation of the supplier's ratio of quality to cost. Some suppliers have low cost and poor general quality; others may have a high cost and high quality, but prices asked are often not a measure of quality received.

In at least one large automotive plant, incoming forgings from different suppliers are inspected 100 per cent with Magnaflux. This is done primarily to save the cost of processing defective forgings. But the purchasing department has also found the statistical results of the inspection valuable.

In evaluating results they have found that one supplier with the lowest cost does not deliver best quality, but delivers a fairly satisfactory quality level. They have found that their lowest net cost is from this supplier even though there is another whose general quality is appreciably higher, but whose prices are also higher. A third supplier is even a little higher in price, but his general quality level is somewhat better. It is obvious that with low cost 100 per cent inspection in use, the supplier with the best quality to cost ratio will be the favored one and receive a larger share of the business.

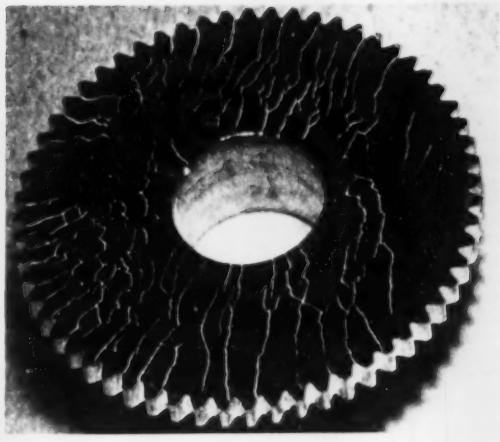
Another reason for inspecting incoming material is to save cost of processing defective material. Generally there is not enough factual information obtained in the shop by the cost accountant to prove the savings possible by this early inspection. The last reason why is actually an inspection of finished material as well as of incoming material.

Good Start—Second important place after receiving, for inspection in production plants, is in the inspection of parts that are first run through a process. Whenever a forging is made from new dies, inspection of the first pieces will prove the ability of the process to produce a satisfactory product.

If the process is not correct (as for example in the case of forgings) the dies may not be properly designed or the bar may not be properly heated or the operator may be handling the part incorrectly; then those mistakes in the process are quickly determined.

Early correction of mistakes in the process can prevent a carload of bad material. Inspection at this point also insures the probability that future parts made will be good and saves the cost of processing bad parts further. For example, the machining time on the bad forgings is the actual and important saving resulting from this process control inspection.

Maintain Quality—Third: Parts are inspected throughout the production run. We may get a process under control, with correct forg-



Cracks were found after grinding, pointing to improper grinding or incomplete stress relief. Sampling inspection could be used until cracked parts are no longer produced

	No. Pcs. Raw Stock Inspected	No. Pcs. Rejected and Returned to Vendor	No. Pcs. Mfg'd.	No. Pcs. Rejected in Final Inspection and Scrapped	No. Good Pieces Sold
A—	1000	0	1000	50	950
B—	1000	50	950	0	950
C—	1053	53	1000	0	1000

ing dies, heating temperature, and operator technique mentioned in the forging shop example, but how do we know that that process will stay in control? Sampling inspection throughout a long production run insures that the process remains in control, and if it is not, it catches worn dies or incorrect operation and generally points the way toward its immediate correction.

Fourth: In this inspection during processing, there may be a noticeable increase in the percentage of defectives. When this is noticed, it is a signal to use inspection to check the output of each individual machine. There may be several forging hammers working on one job. In checking the ouput of the forging shop, the percentage of rejections goes up from under 1 to 10 or 15 per cent, something is out of control. The probability is that only one of the forging hammers is causing all the trouble and a spot check of the production from each hammer will quickly pin point the cause. This allows quick correction and minimum dollar loss.

Pinpointing Trouble—Fifth: Inspection between multiple operations performed in sequence is another trouble shooting device to locate the exact point of trouble. A part may be subjected to several grinding operations of which one is responsible for the epidemic of grinding cracks which show up in the spot check of the entire department.

A number of plants are employing portable inspection equipment to move around in large grinding departments and other departments where there are multiple operations. These inspectors test to find the early signs of trouble and become adept at finding them quickly. This inspection work is of no value however, unless the production men are fully informed of its purpose and work closely with the inspector. It seems to have worked out very well in plants where this in process inspection operation is actually under the control of the production department rather than the chief inspector. They then feel that they are controlling their own operations and are not being caught by some other department whenever they make a mistake.

USE OF NONDESTRUCTIVE TESTING

WHEN	WHY
1—Inspect incoming material	Return defectives or whole lot for credit and replacement Evaluation of supplier quality/cost ratio Save cost of processing defective material Insure quality of outgoing material (if not further processed)
2—Inspect parts first run	Prove ability of process to produce satisfactory product Insure future parts good and not waste processing cost
3—Inspect throughout production run	Insure process stays in control and not waste processing cost (excellent place for sampling)
4—Inspect output of individual machines	Pin point cause of defects found by No. 3
5—Inspect between multiple operations	Pin point cause of defects found by No. 3
6—Inspect finished parts	Keep customer good will See that other inspection is under control Personal pride of product
7—Inspect during and after salvage	Save maximum number of parts Determine cause of troubles
8—Inspect during service	Save cost of failures Salvage parts and prolong use Learn service problems and improve material and design

Touchy Subject—Sixth: Inspection of finished parts is the most common in industry. This inspection is the one which gives the entire inspection operation the greatest criticism. Production people and management often feel that inspection is purely devoted to the rejection of material which, except for some unfortunate occurrence, should have been shipped and billed and collected for. The inspector steps in and stops that profitable operation and therefore is considered to be a detriment to maximum production.

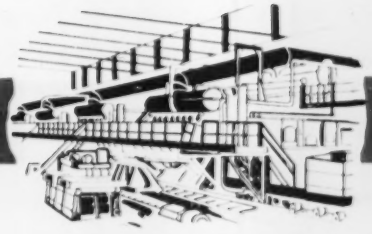
One of the most important contributions in eliminating this feeling can be performed by the final inspector. If he keeps the parts flowing through this department as rapidly as they are received, he can then report troubles to production before they have gone too far, corrections can be made, and the dollar savings will more than make up for the inspection cost. On that basis alone, the final inspector can economically justify his existence.

Other reasons are shown in the table but are those to which a dollar sign is difficult to apply. How valuable is customer good will? We can say that it is all important in the maintenance of customer relations and therefore to the business of the company, but the production man argues that his product is generally acceptable and the inspector isn't doing very much to build good will in comparison with the careful work of the producer or the designer.

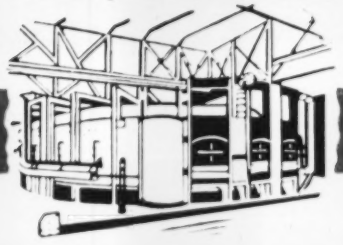
Save Where Possible—Seventh: In almost every production operation, pieces are produced which are not up to standard and if the value of the completed part is sufficient to justify the cost of repair it is salvaged. Inspection during the salvage operation and after its completion will result in a minimum of salvage cost and a maximum number of saleable parts saved from the scrap heap. A parallel advantage is obtained by using the

Ask the men

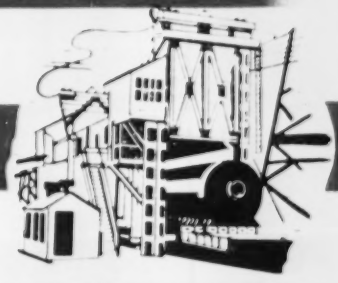
who operate them



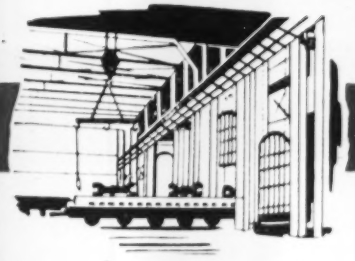
OPEN HEARTH · SLAB HEATING



ROTARY HEARTH · SOAKING PITS



ALL TYPES OF ANNEALING



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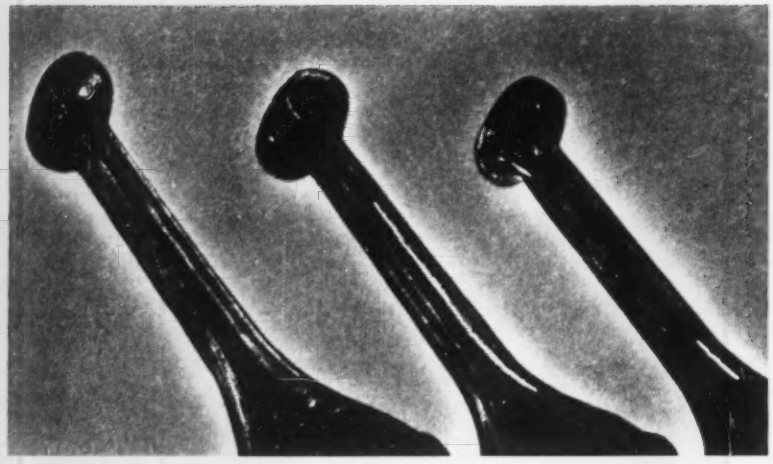

Large auto plant saves on 1 to 2 per cent of all finishing by fluorescent inspection of connecting rods after forging eliminating those showing cracks

inspection as a means of determining the cause of the trouble. If the knowledge of the cause is fed back to the source of the raw material or the processing department involved, corrections can be made which will reduce these finished part losses to an absolute minimum.

Eighth: So far most of our attention has been devoted to the economics of inspection during the manufacturing process. Inspection during the service life of any machine is also the means of affecting a very large savings. The reduction in service failures is the aim of every maintenance department, whether in a factory working with machine tools, or in the transportation industries.

This is a qualitative approach to be quantitative we must have facts and figures dollar figures.

For example, such dollar analysis as the following is excellent appraisal of the value of any inspection operation.

Stitch in Time—In one operation during manufacture of finely finished heat treated and ground parts, the manufacturer rough machines bar stock and nondestructively tests it. Parts free from seams or other imperfections are then heat treated and ground. The heat treating and grinding operations cost $1.50 per piece. Inspection costs 3 cents per piece.

During one period, 9607 pieces were inspected at a total cost of $288.21. Of these, 937 pieces were found defective. The saving in processing cost on these defective pieces was $1405.50. Deducting the cost of inspection shows a net saving of $1117.29. But how do we know that the potential loss of $1.50 per piece would actually have occurred on these 937 rejected pieces?

Again, we are faced with that old problem of the inspection specification. We must be reasonably sure that that all rejected pieces were defective. If so, that $1117.29 was saved. If not, then losses include the value of the pieces, the cost of the inspection and the profit which would have been made on them if they had been completed and sold.

This has been a brief appraisal of some of the economic factors entering into nondestructive testing. It may be of value to you in judging the effectiveness of the testing operations in your own plant. It is important to realize, as we do make these dollar evaluations through industry, how many important contributions to the profit of manufacturing plants have been made through nondestructive testing.

In summary, these facts seem to be most important:

First: The testing means is important, but outside of its cost per piece is entirely secondary as to whether it increases profits.

Second: We must accurately measure the amount of those increased profits by determining the costs of inspection and then proving that they are less than the costs incurred without that inspection, otherwise the testing is not justified.

Third: We must study the service requirements of each part and determine a fair inspection specification for it based upon the quality standard needed.

Fourth: We should work toward the "ideal tolerance" in specifications, since that results in the greatest profit. Determine "where" and "why" so as to organize the most efficient inspection plan.

Fifth: If we are considering final inspection; what are the costs of service failures? If we are considering "in process" inspection, are the costs of each processing operation, and which of them are most apt to cause scrap?

Sixth: Enlist the help of the cost department so that your recommendations or decisions are based on dollar facts.

Lastly: It should be part of the inspector's job to accummulate data from his operations so that management will have a valid basis for evaluating the work of the nondestructive testing program. Inspection is not fundamentally the operation of judging parts against standards it is fundamentally the weighing of a dollar-cost figure against a dollar-saved figure in order to show a profit.

Book Covers New Ion Exchanger

To help explain one of the newer roles that ion exchangers are playing in industry, Permutit Co., New York, has prepared a 28-page bulletin, Demineralization including Silica Removal by Ion Exchange.

Due to its economical operating costs, demineralization and silica removal through the medium of ion exchange resins has come into use in all phases of industry. It is being used to advantage in such fields as power plants, chemicals, electroplating, process liquors, plastic products, nonferrous metals and for treatment of wastes of many types.

Bulletin 3803, describes the chief applications, principles of operation, design features, advantages, recommendations and specifications of firm's demineralizing and silica removal apparatus and synthetic resins.

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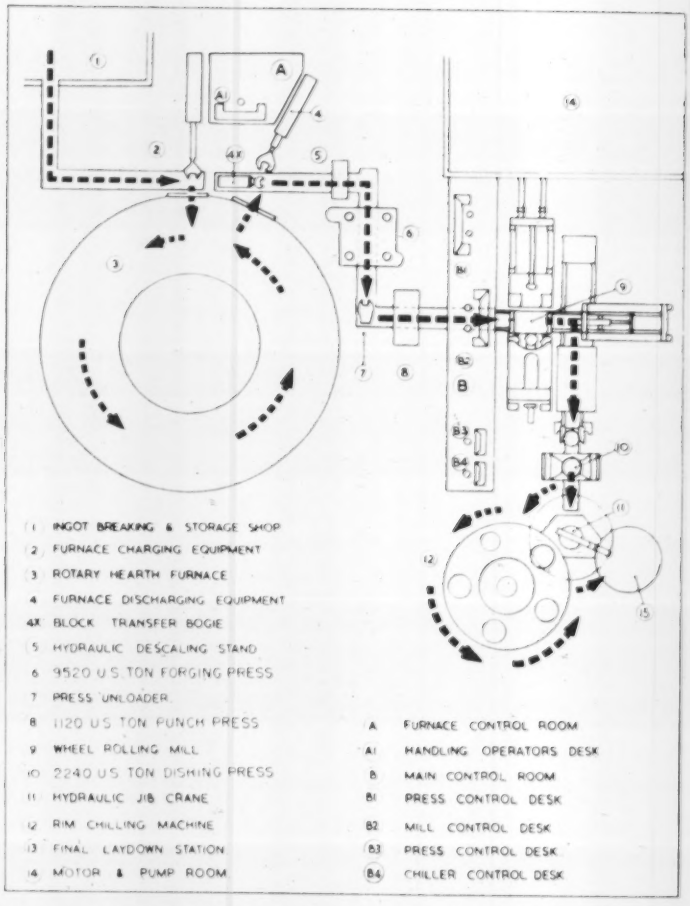
Continuous Forge Rolls up Wheel Records

New English plant produces at a rate of 60 pieces per hour from a single-heat remote controlled process. Co-ordinated American and British design work pays off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11 HYDRAULIC JIB CRANE
12 RIM CHILLING MACHINE
13 FINAL LAYDOWN STATION
14 MOTOR & PUMP ROOM
A FURNACE CONTROL ROOM
A1 HANDLING OPERATORS DESK
B MAIN CONTROL ROOM
B1 PRESS CONTROL DESK
B2 MILL CONTROL DESK
B3 PRESS CONTROL DESK
B4 CHILLER CONTROL DESK

Layout of the wheel forging plant at Trafford Park Steelworks shows arrangement of components that produce continuous one-a-minute output

RAILWAY WHEELS ranging from 24 to 50-inch diameter on treads are rolling off a new forge at a continuous rate of 60 pieces per hour. That's the report from Taylor Bros. & Co. Ltd., largest wheel producers in the British Empire, who recently initiated production from their new installation at Trafford Park Steelworks in Manchester, England.

Layout of the plant and design of the equipment was under the control of J. H. Ellis, Taylor's assistant chief engineer in charge of development, in conjunction with consulting engineer, E. Homer Kendall, Kendall Engineering Co., Alliance, O. Major plant items include a 69-foot diameter rotary hearth furnace, 9520-ton (U.S.) forging press, 1120-ton (U.S.) punch press, an electrically driven rolling mill, a 2240-ton (U.S.) dishing press, and a fully automatic handling plant specially designed to insure fast, reliable production.

Start in Ingot Shop—Ingots are cut or broken from octagonal or duodecagonal stock in widths from 12 5/16 to 18 inches, depending on the size of the desired wheels. Gravity roller conveyor takes the blocks to the furnace charger in the main forge building.

Furnace charging machine consists of a cable driven carriage mounted on a fixed but adjustable bridge. Both the peel tongs gripping action and the peel lifting action are hydraulically motivated, and the rotation of the peel through an arc of 90 degrees is effected by means of cams and rollers operated by the action of hoisting or lowering the peel structure.

Automatic Charge Cycle—Charging cycle commences when the furnace door is lifted. The tongs grip the block at a fixed distance from the base; peel structure is lifted and tongs rotate 90 degrees so that the axis of the block is made vertical; then the carriage moves to the extreme forward position, bringing the first block to the innermost position on the furnace hearth. Completion of forward travel actuates lowering of the block and tong release.

After the release stroke, the carriage returns to the loading position, tong head rests on the centering cam, and the cycle is ready to repeat itself on the second bloom. When the seventh or outside bloom has been charged, the furnace door is closed and the peel and tong head cooling sprays are brought into action. Carriage travel control has provision for

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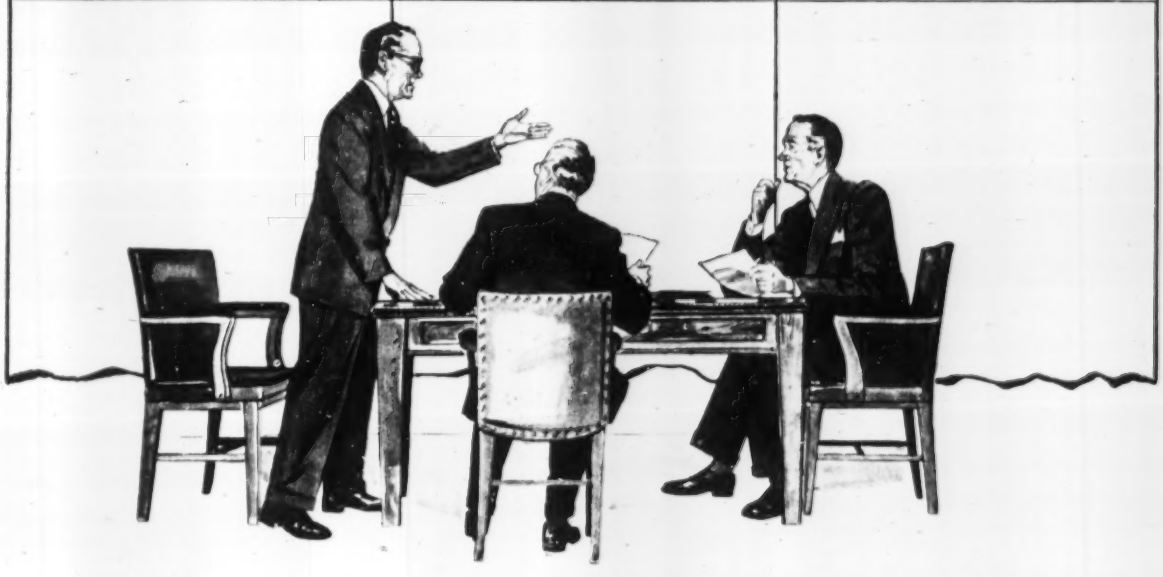
CONTROL DATA		
LINING	**MAX. FUEL CONSUMPTION**	**CONTROL**
Ordinary Firebrick	**1,000,000 BTU/HR**	**100 to 150F Overshoot of Critical Pouring Temp.**
B&W Insulating Firebrick	**500,000 BTU/HR**	**No Overshoot of Critical Pouring Temp.**



THE CHART ABOVE shows how B&W Insulating Firebrick slashed fuel bills by 50% and provided close temperature control when it was used in place of ordinary firebrick in a crucible type furnace melting magnesium. Similar savings were also made on identical units melting aluminum. • The reason for this superior performance is that lightweight B&W Insulating Firebrick store and conduct less heat, thus provide faster heating up time and lower fuel consumption. These brick also respond rapidly to changes in heat input, assuring excellent temperature control.

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- BILLET EJECTORS—PINCH ROLL STANDS
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- Strip Steel COILERS and REELS—SCRAP BALLERS
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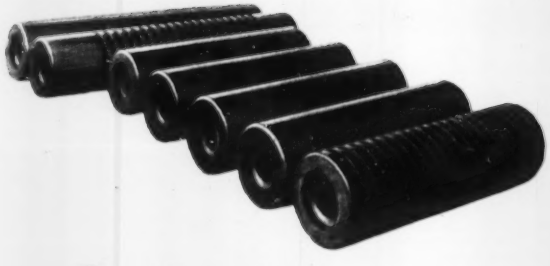

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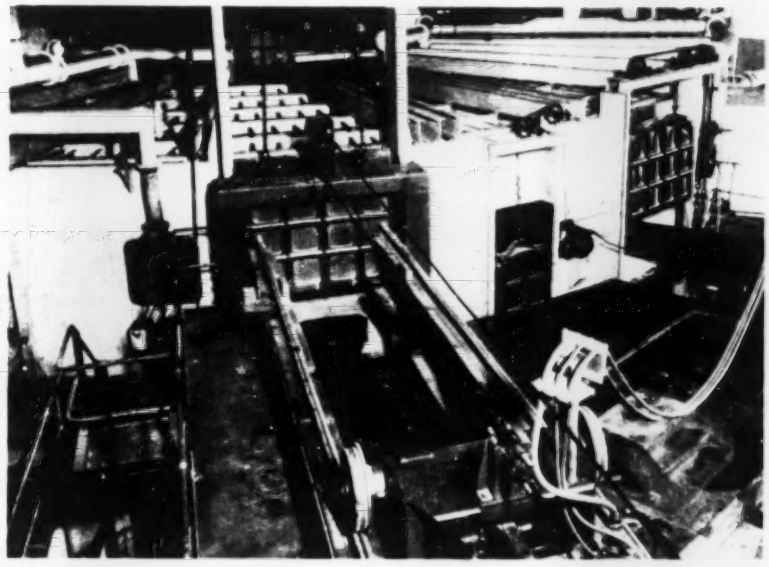
Youngstown, Ohio



This 69-foot rotary furnace, largest in England, has a capacity of 44.8 tons per hour. Billet discharge machine is in foreground, charge is at right

variable radial spacing of the blocks on the furnace hearth.

Into the Furnace—Built by the Salem Engineering Co. Ltd., the rotary furnace is the largest of its kind in the country. It has a rated heating capacity of 44.8 tons (U.S.) of steel per hour at a maximum temperature of 1280° C. Diameter over the outer buckstays is 69 feet; the hearth is 15 feet wide and has a mean diameter of 48¼ feet.

The furnace has four firing zones and is fitted with 39 steam atomizing burners designed for heavy fuel oil burning. Preheated air for combustion is obtained by utilizing part of the heat contained in the waste gases. Preheated air is used in the heating zones and atmospheric cold air in the preheating and soaking zones.

The rows of blocks are carried through the heating and soaking zones of the furnace by progressive indexing of the hearth at a rate corresponding to the output of the plant. At a production rate of 60 pieces per hour, for example, the heating time of the blocks is approximately 6¼ hours.

Discharging Machine—The heated blocks are removed from the furnace by a high bridge type discharging machine of 2240 pound capacity. Similar in basic design to the charging machine, the travel of the carriage to the predetermined billet position is controlled by a multiple cam type limit switch with vernier setting adjustment and "slow down" and "stop" rings for each billet position.

To commence the discharge of a row of blocks, the carriage travels to the outermost hearth position with peel lowered. At this point, the billet is gripped, hoisted and withdrawn from the furnace and aligned over an air-operated ram which lowers it 30 inches to the transfer buggy level. All of these operations are interlocked with the movements of the discharge carriage.

Then to the Descaler—Lowering of the elevator ram from the discharge level to the transfer car automatically closes the furnace door, and the control operator initiates the transfer cycle. The car is a tubular fabrication mounted on four wheels for traveling on the 67 foot track structure, through the descaling station to the 9520 ton forging press. The front bulkhead of the body carries the grips which hold the block while in transit.

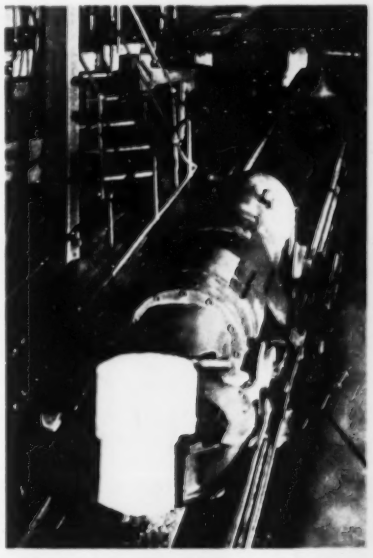
Descaling is a fully automatic process; the transfer car turns the water on and off in its forward travel to the forging press. Twelve Harland-Aldrich No. 2 nozzles arranged above and below the surface of the block each have a capacity of 34 gallons per minute.

Dual Pressure Forging—Still in the automatic transfer cycle, the block leaves the descaler and stops when it is over the slabbing die of the forge. Release of the block from the car grips and return of the car to the furnace is now under the control of the forge press operator.

After slabbing until the required thickness is achieved, the block is gripped in the centering arms and transferred to the lower forging die. The upper sliding table is then moved to bring the top forging die under the center line of the press. Second forging is completed under intensified pressure, and then the lower sliding table is moved back to bring the completed forging over the stripping ram and the next block under the press crosshead.

Punched and Rolled—On being lifted from the bottom die by the stripping ram, the forging is gripped, lifted further and twisted through 90 degrees by a special machine to bring it directly over the live rollers which run through the punching press and on to the rolling mill. The press unloader is operated by the punch press driver who is seated alongside the 9520 ton press driver at a common control desk.

Punch press itself is of the upstroking type with twin 26-inch diameter rams and with double acting pull back cylinders. Rated ca-



Transfer buggy takes the billet from furnace discharge to 9520-ton forge, passing through descaler on the way

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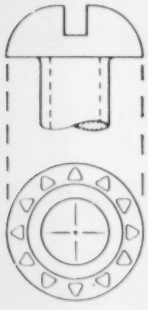
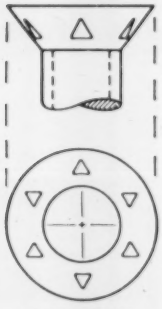
NON-COUNTERSUNK HEADS



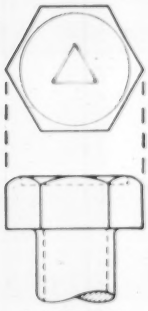
12 IMPRESSED TRIANGLES UNDER HEAD

COUNTERSUNK HEADS



6 IMPRESSED TRIANGLES UNDER HEAD

HEXAGON HEADS



1 EMBOSSED TRIANGLE ON TOP OF HEAD

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Guaranteed Now, identification goes beyond boxes or other containers and labels. The screw identifies itself, and when you see the P-K triangle mark you know it is the *guaranteed* screw, backed by the "Guarantee of Highest Quality" printed on every box. Look for the P-K triangle on the screws you buy and use. It's your one sure way to guard against job-slowing, parts-wasting screw failure . . . the way to make *planned* assembly savings *pay off*. Parker-Kalon Corporation, 200 Varick St., New York 14.

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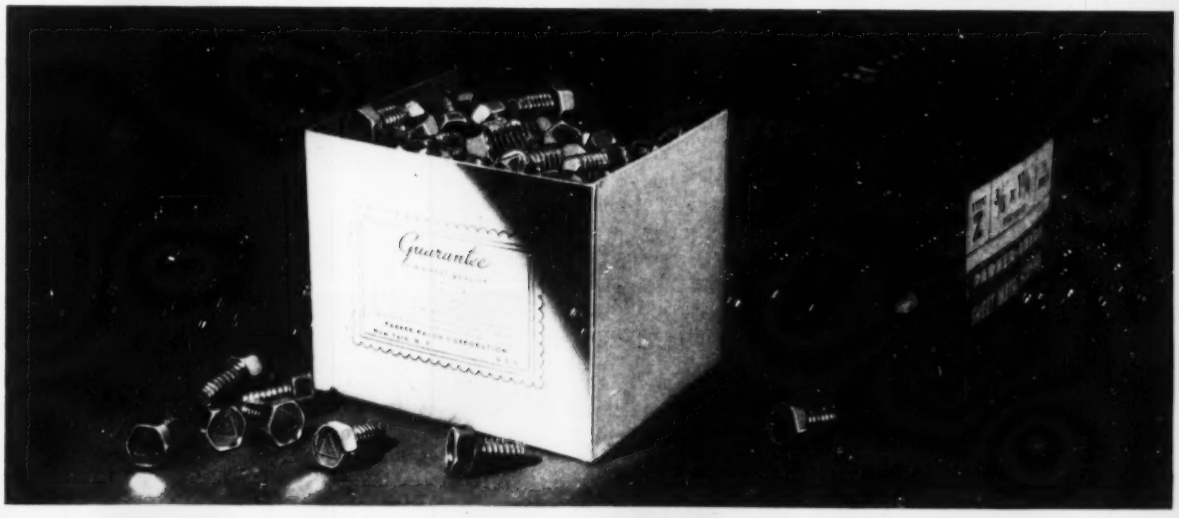
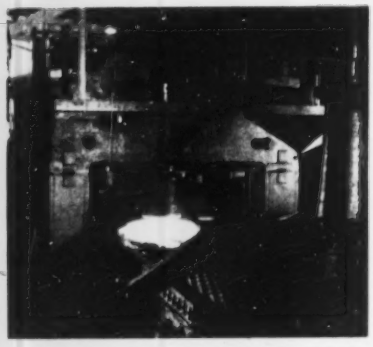


Billet is slabbed flat, then forged under 9520-ton impacts to rough-out wheel section for finished rolling



The press, of the upstroking type, punches the wheel boss with a force of 1120 tons. Edge rolling is next

Edge rolls reduce rim section area, and pressure rolls bear on the wheel's tread surface to form the flange

pacity is 1120 tons with a punch stroke of 9½ inches at a speed of 3 feet per second. When the punch has penetrated the boss, limit switch stops the crosshead and the forging is lowered back on the live rollers for the trip to the rolling mill.

Loading the Mill — Loading mechanism for the rolling mill is mounted under the main control room, its main supporting frame being pivoted at the mill end and suspended at the other end from a curved track. A simple carriage activated by a hydraulic cylinder carries a self-centering grip mechanism which rotates so that the grips clear the wheel forging.

Travel stroke is arranged to take the bloom from the end of the roller table to the center line of the mill where it is deposited on forks attached to the roll carriages.

Rims Rolled First—Forged rim section is reduced in area in the mill and formed to the required shape by means of driven edging rolls which bear on the front and back faces and on the inside contours of the rim, and by the load on two pressure rolls which bear on the tread and form the flange. The mill, which is of Taylor-Kendall design, also has a driven main roll mounted in an adjustable carriage and two guide rolls mounted on a separate carriage but sliding on the same ways as the main carriage.

Hydraulic pistons for the guide roll carriages are attached to the main roll carriage to give movements relative to that carriage. Mounting arrangement of the guide rolls permits their retraction behind the main roll to facilitate loading and unloading of the mill. The arrangement adopted reduces the handling time at the mill and simplifies the handling equipment.

Dishing Press Next—On completion of the rolling, the wheel is transferred to a flat-topped car which takes the rolled wheel over the bottom die of the dishing press. A swinging arm restrains the wheel while the car rolls out from under it, and the wheel falls on to the die. Moving the lower sliding table of the press brings the die under the crosshead for the next forging operation.

This operation changes the web of the wheel from a flat disk to a cone shape and sets the boss offsets. With a rated capacity of 2240 tons at an accumulator pressure of 2200 psi intensified to 6000 psi on a single ram, the press completes the dishing operation. While still on the press stool, the wheel is hot stamped with the cast number of the steel.

Jib Crane Unloader—Mounted over the dishing press table cylinder is a 1-ton hydraulic jib crane having a rigid, guided hoist in the form of a box section column sliding vertically in guides at the end of the jib arm. With its 14-foot diameter rotation, the crane covers the dishing press stripping stool, the chiller loading station and the final laydown station. These three points are at 120 degree intervals in the swing.

Rotation of the crane is accomplished by a transmission unit driving through a planetary gearbox, the outer case of which is held by a friction brake to prevent damage in the event of fouling the jib arm.

Rim Chilling—Consisting of five stations mounted on an electrically driven turntable of 14-foot diameter, the rim chilling machine revolves at indexed speeds while automatic water spray devices function at each station. At the center of each station is a set of loading forks under which is mounted a live roller center. At the point of intersection of the spray ring pitch line and the jib crane radius a fixed cam is arranged to lift the forks above the level of the live rollers in readiness to receive the wheel from the jib crane.

With the wheel deposited on the forks the main turntable is indexed 1/5th of a revolution, lowering the forks and leaving the wheel on the rotating rollers. Water spray of that station is automatically turned on together with the spray timing device. As the first station is carried away from the loading point, the fifth station goes into that position and the wheel is lifted from the live rolls by forks for transfer by the jib crane to the laydown position.

Final Laydown—Three stacking pegs mounted on a simple turntable comprise the laydown. The pegs, designed to receive five completed wheels, have their upper end shaped to suit a set of automatic

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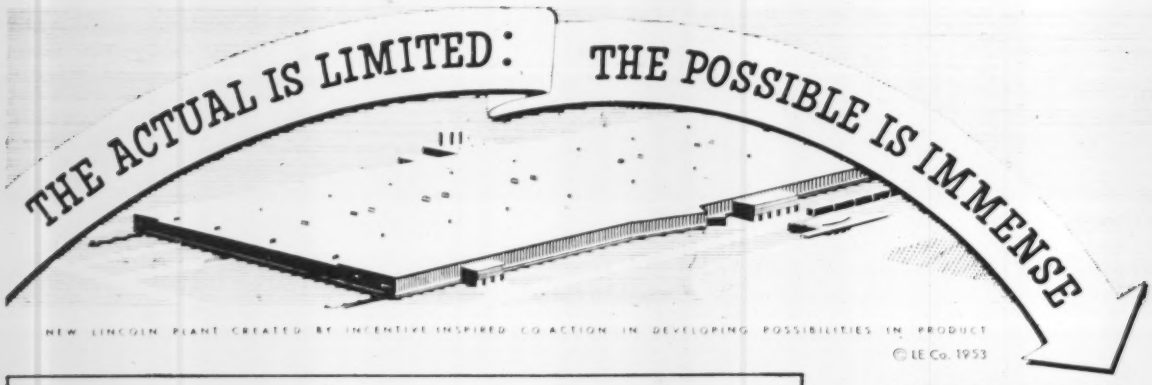

NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

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WELDED STEEL DESIGN SIMPLIFIES PRODUCTION . . . CUTS COST ON MACHINE TOOLS

by **William B. Boice**
Boice-Crane Company, Toledo, Ohio

COSTLY machining operations like milling castings can be eliminated by designing for welded steel construction. On our jointer, for example, the top surface is now finish ground to close tolerance in one setup after welded assembly. Wherever machining is required, with steel construction precision tolerances are often held in one cut as compared to rough and finish cuts required on most castings.

Since steel is twice as rigid as gray iron, less material is needed to resist deflection under load. If made from castings, our jointer would weigh twice as much and still be subject to inaccuracies from deflection and warpage no longer experienced in the present welded steel construction.

With less material, less machining and fitting involved, shop costs are reduced. Furthermore, the modern appearance achieved with the welded design has greatly improved selling appeal.

Fig. 3. Welded steel design [illegible]

Fig. 4. Efficient girder-like structure [illegible]

WELDED DESIGN ALWAYS SAVES STEEL AND LOWERS COST

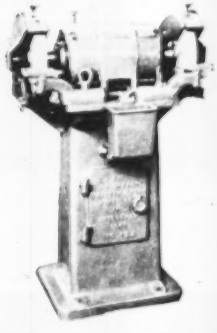

Fig. 1. Original construction *of pedestal grinder required costly milling and drilling using heavy machine tool equipment. Casting had to be filled and painted to obtain quality finish for sales appeal.*

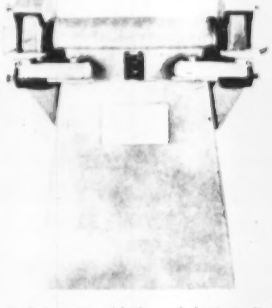

Fig. 2. Present welded steel design. *Quality of product and appearance improved to enhance sales appeal. Stability increased by lowering motor into pedestal base. Weight is cut 35% yet product is more rigid and costs 12% less to produce. Courtesy, The Bridgeport Safety Emery Wheel Co., Inc., Bridgeport, Conn.*

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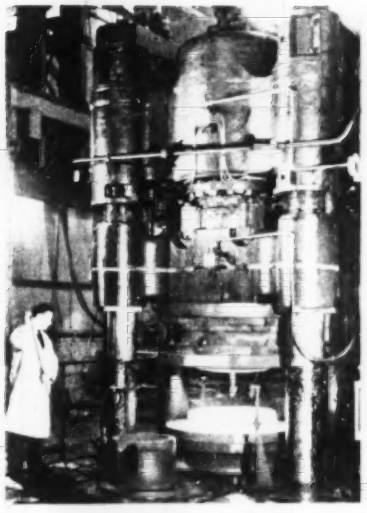


Correct hub offset and plate contour are formed in this dishing press, a 2240-ton, single ram type machine

tongs fitted to the overhead crane. This facilitates easy removal of the completed stacks of wheels to the cooling beds.

Throughout the entire process from furnace to cooling beds no manpower is needed on the work floor itself. Complete control is maintained from a raised, glassed-in booth centrally located. Cycling in the individual operations is automatic, manual control being necessary only at the major processing points.

Ideas Generated for Magnet Use

A one-a-month information kit describing permanent magnet application ideas for industry is announced by Carboloy Department, General Electric Co., Detroit. The basic kit consists of a permanent binder with six application ideas, each described on a separate loose-leaf page. Each month, the department plans to issue a new magnet application sheet to be distributed automatically to those who request the basic kit.

First six ideas presented are use of magnets on conveyors to transport ferrous parts; sheet steel separators; floor sweepers to pick up ferrous objects; tool racks; and shear tables for cutting sheet metal. Each idea sheet contains complete technical information and diagrams regarding the particular application described.

Molten Metal Pump Built

EMPTYING furnaces of molten metal at Wire Equipment Mfg. Co. Inc., Trenton, N. J., has been simplified with the use of an air-driven pump immersed directly into the metal. Temperatures are so hot that lubrication for the motor is supplied by a lubricator located 20 feet away.

Built by Gast Mfg. Corp., Benton Harbor, Mich., the pump is driven by a 3-hp rotary-vane motor and has been used to pump molten aluminum at 1400° F. Molten metal is discharged through a 2-inch pipe riser, and the 8400 pounds of aluminum in the furnace are pumped out in about 4 minutes.

Pump Glows Red — Although pumping time is short, limited mold capacity requires intermittent pumping over a period of 6 hours. As the partially-drained furnace could not supply its own heat, a No. 2 oil burner was directed on the surface of the liquid. Burner flame is often directed on the casting that is supporting the pump motor, causing it to reach cherry red heat.

Only cooling possible for the motor was the air passing through it about 1 per cent of the time the pump was in the molten metal. Inspection after the test showed motor vanes unharmed, although there was some carbonization of the lubricant in the bearings.

Interesting feature of the construction for this application is the pump impeller bearing which has $\frac{1}{8}$-inch clearance. Before immersing pump assembly in the metal, it is preheated over the furnace.

Atomic Power Problems Aired

Control problems involved in the possible use of atomic energy to generate electricity were outlined in a paper titled "Nuclear Power Plant Control Considerations", presented during a symposium on nuclear instrumentation at the winter general meeting of the American Institute of Electrical Engineers in New York.

Use of a nuclear reactor as a component in such a system imposes many unusual design problems. But basic development procedure for designing such a control system is the same as for any other type of power plant, said M. A. Shultz, Westinghouse Atomic Power Division, Pittsburgh.

When a reactor is used to provide heat energy to motivate a turbine system for generation of electricity, several problems must be solved. Among them Mr. Shultz listed safety of operating personnel, disposal of excess heat and nuclear radiation, start-up and shut-down timing and means for using the heat that is generated by nuclear fission.

". . . It is apparent that the operational requirements of the plant determine the control system in the same manner as in a conventional plant", he concluded.

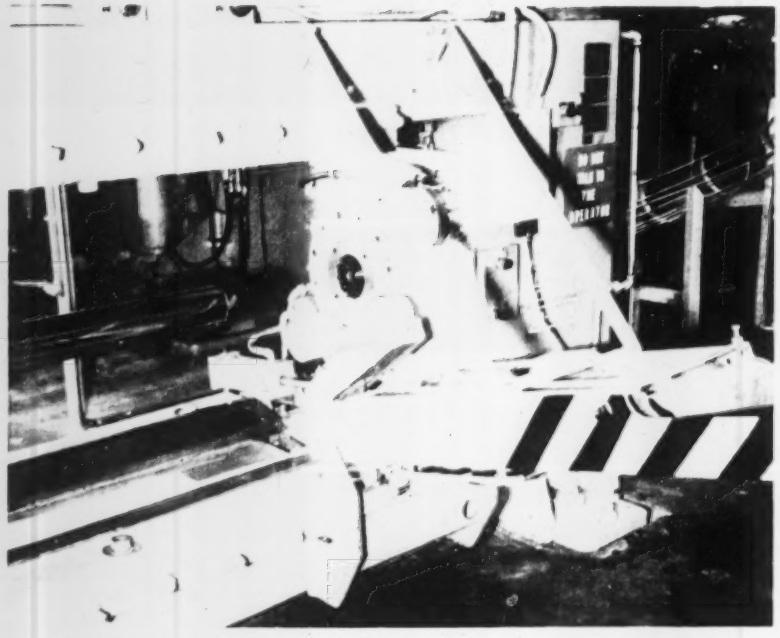
Hot Screen Cuts Clogging

ELECTRICALLY heated screen cloth prevents clogging or "blinding" when wet materials are screened, according to Hewitt-Robins Inc., Stamford, Conn., who recently announced the new development. With the system, worn cloth can be replaced as easily as before addition of heating equipment.

Current is carried to the screen by short insulated cables attached to copper bars which are located under the screen cloth and make direct contact with it. This arrangement eliminates power losses encountered in some systems where current is passed through steel or copper skirtboards located along side the screen and above the screen cloth.

How It Works — The heated screen cloth dries out and bakes wet coal, clay, stone or other material as it tends to build up on the screen cloth wires. This causes it to flake off instead of blinding the openings. The company claims faster processing of wet materials, efficient sizing and reduced screen cloth wear as advantages over manual cleaning methods.

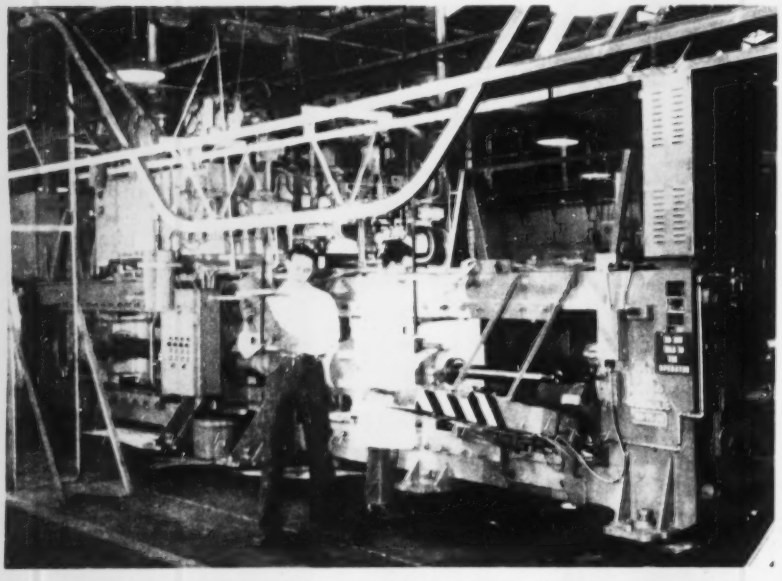
Current going into the screen cloth is regulated by a Hannon variable step screen cloth heater. Voltages range between 5 and 15 and amperes from 1000 to 4000. Current distribution bars are shielded from abrasive action of material being screened, thus preventing weak or broken contacts due to corrosion of steel or copper parts.



On this draw the feeding device loads parts from a chute. Parts are lifted into position by pneumatic paws. Closeup shows punch and the ring die

Press Works in Two Directions

Utilizing a horizontal ram this new press works at both ends of the stroke. Elimination of the idle return is one advantage. Easy installation is another



Double-end press produces at both ends of the horizontal stroke. Press is only 10 feet high and needs no foundation pit. This is the fourth draw

MANUFACTURERS of cartridge cases have the double problem of making cases in volume quantities while meeting rigid ordnance specifications.

Rheem Mfg. Co., in its New Orleans plant, undertook the job of producing 90 mm cartridge cases. They wanted to set up a line entailing minimum handling and human effort. To help in the creation of this line they called in Clearing Machine Corp., Chicago.

Double Stroke — Clearing engineers proposed a new kind of hydraulic press for the cupping and drawing operations. These presses have certain inherent advantages. A press drawing a shell to a final length of 24 inches requires an unusually long stroke. Long return stroke necessarily slows down the total stroke time.

One way of reducing this lost time, Clearing reasoned, is to produce at both ends of the stroke. The double-end press does this and has a number of other advantages which fitted in with Rheem's future plans.

Space Saver—Lower first cost is one of the benefits of this type of equipment. The press requires less manufacturing space than two conventional presses, especially where ceiling height is a factor. It's just 10 feet high. Conveyorized material handling equipment is easily adapted to them.

Installation is a relatively simple matter. No foundation pits are required. This was especially important to Rheem since sub soil conditions at their New Orleans plant are unstable.

Maintenance problems are also simplified. The low silhouette of the press makes operating mechanism readily accessible. Power consumption is reduced since it has only half the motor capacity of two separate presses.

Production Plan — Starting with a disk of 1030 steel 0.69-inch thick and 8⅞-inch in diameter, a series of press and auxiliary operations converts these disks into a slender shell case that measures 24 inches in length.

First operation performed on double-end presses is cupping. Here, the part is forced through a carbide insert draw ring which reduces the wall thickness about 44 per

A Century MOTOR With Gas Mask PROTECTION

Underwriters Approved

EXPLOSION PROOF MOTORS

Take a look at these Century Explosion Proof Motor features:

- Vital motor parts protected — sealed into inner frame.
- Motor can be reversed without changing direction of the fan — fan runs in either direction.
- Uniform ventilation surrounding outside of inner frame.
- Smooth, straight through ventilating passages.
- Winding electrically insulated 6 different ways.
- Unusually free from vibration.
- Ball bearing housing keeps grease in — dirt out — lubricated for several years' normal service, with grease plugs for additional lubrication, if necessary.
- Easy to remove fan guard is held securely in place with two screws.
- Smooth exterior surface is easy to clean.
- Cast iron frame with integrally cast feet resists rust and corrosion — even when mounted in places where processed materials may contact the feet.
- Rugged construction gives generous safety factor for rough handling.

CE-760

Your property and employees are protected, because this Century Explosion Proof motor is totally enclosed—sealed to prevent a motor spark from causing an explosion.

Class I, groups C and D are used in atmospheres containing flammable gases or vapors: Ethyl ether vapors, gasoline, petroleum, naphtha, alcohols, acetone, lacquer solvent vapors and natural gas.

Class II, groups E, F and G are used in atmospheres containing combustible dusts: Metal dust, carbon black, coal or coke dust and grain dusts.

Naturally, corrosive or abrasive materials in the air are also sealed out of the vital parts.

For your protection, specify Century motors on new equipment or for replacement. Your nearby Century Distributor will be glad to give you full information on the complete line of Century motors—from 1/8 to 400 horsepower. We are limited in some sizes of the Explosion Proof motor.

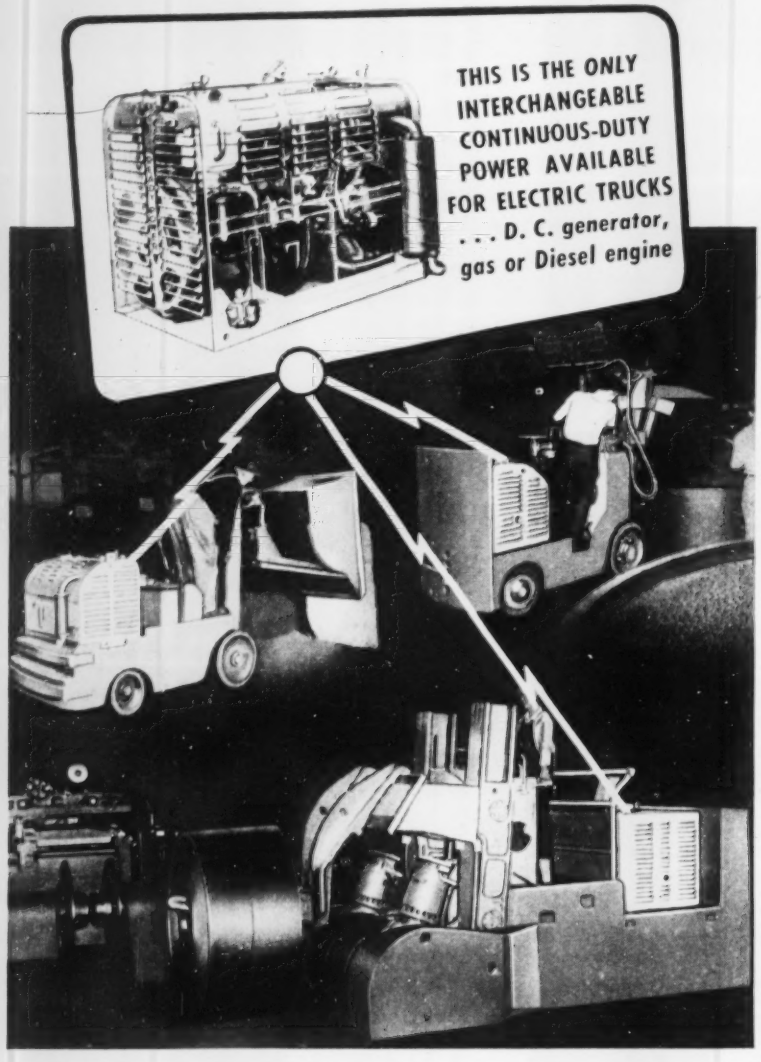
Century C MOTORS

CENTURY ELECTRIC COMPANY

1806 Pine Street • St. Louis 3, Missouri

Offices and Stock Points in Principal Cities

Ready-Power Adds 'GUTS' to Electric Truck Performance


THIS IS THE ONLY INTERCHANGEABLE CONTINUOUS-DUTY POWER AVAILABLE FOR ELECTRIC TRUCKS . . . D. C. generator, gas or Diesel engine

Only Ready-Power Drive gives electric trucks the stamina that means *full power all the time!* With no limit to hours of service, Ready-Power-equipped trucks handle the toughest jobs at lowest costs per ton-mile. Gas-electric and Diesel-electric models are available for ALL sizes of electric trucks.

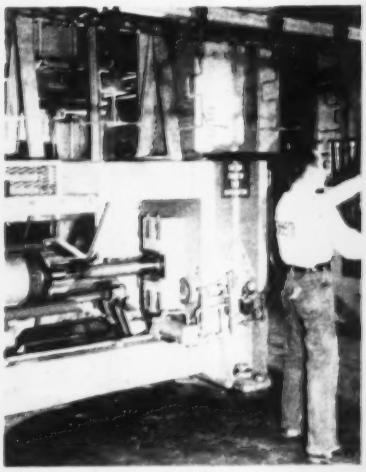
CONTINUOUS-DUTY POWER UNITS

Remember . . . Your Truck Is No Better Than Its Power!

The READY-POWER Co.

3824 Grand River Ave., Detroit 8, Michigan

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units, Gas and Diesel Electric Power Units for Industrial Trucks



Nearly completed case is positioned in the tapering dies. This operation takes 90 tons. Force on each end of the press can be varied independently

cent. Approximately 265 tons are required for this operation.

More Presses—On the opposite end of the same press, parts go through the first draw operation, reducing the wall thickness another 45 per cent. Double end presses perform three more drawing operations and a tapering operation to bring the case to its finished shape.

Base of the cartridge case is formed in two heading operations. These operations are accomplished in 2000-ton hydraulic presses. The presses are twins so they may be interchanged should either one of them be out of service for die changes.

Preheading and heading presses are equipped with rotating dials on the bed. The dials swing 180 degrees allowing the operator to load the drawn part on the heading post at the front of the press. Limit switches on these presses make certain the case is properly positioned on the heading post before the press will operate.

Cloth Dust Collection Reviewed

Dust collection in the mining and metallurgical industries is the subject of a bulletin published by American Wheelabrator & Equipment Corp., Mishawaka, Ind. Case histories given in this 8-page brochure show how the company's Dustube cloth-tube-type collectors are used in filtering gases from

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for ultra precision boring and milling

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DEVLIEG MACHINE COMPANY • 450 FAIR AVE., FERNDALE, DETROIT 20, MICH.

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Only PITTSBURGH **Armored Gears** are made according to the exclusive PITTSBURGH formula which covers a proven combination of metal, machining, AND heat-treating. It is not enough to use tool steel, which often will not stand shock loads. PITTSBURGH selects the best metal for the particular gear body, then machines it, and heat-treats the wearing surfaces to give ultimate life.

This process gives you gears that have tough, ductile cores, and teeth that wear almost interminably. PITTSBURGH **Armored Gears** are guaranteed to give five times the life of untreated gears, one to one and one-half times the life of oil-treated gears, and equal or longer life than any other gear in identical service. You can identify them by their "**Pittsburgh Purple**" corrosion preventive coating.

You'll never know how good PITTSBURGH **Armored Gears** are until you try them. Send us your specifications or give us details of service requirements so that we can make recommendations.

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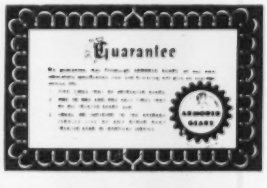
REDUCERS

CRANE WHEELS



PITTSBURGH GEAR

COMPANY | 27th & Smallman Streets
Pittsburgh 22, Pa.
Phone: ATlantic 1-9950

subsidiary of **BRAD FOOTE GEAR WORKS, INC. • CICERO 50, ILLINOIS**

such equipment as lead blast furnaces, sintering machines and cupolas melting slag.

Other applications presented include dust control in dross sampling, coal cleaning and asbestos processing. Role of synthetic fabrics in filtration of hot or corrosive gases is also discussed.

Air Force Nomenclature Indexed

Index of approved item names section of Federal Guides to Standard Nomenclature for use on drawings and other documents prepared by contractors for the Air Force are now available, in limited quantities, at Air Materiel Command headquarters.

This guide provides contractors with consistent, uniform nomenclature for identification of all items purchased by the Defense Department. Previously, items were purchased and identified separately under various nomenclatures, by each arm of the service.

Air Force contractors may receive the alphabetic Part I of the guide on request to the Cataloging and Packaging Division, Directorate of Supply and Services, Headquarters, Air Materiel Command attention MCSISD.

Pickling Reference Published

Revised edition of its standard reference work on pickling, "Efficient Pickling with Rodine," has been published by American Chemical Paint Co., Ambler, Pa.

The 80-page reference breaks down scale removal into five sections, covering Pickling and Other Acid Uses; Pickling Processes; Rodine; Pickling Processes with Rodine; and Suggested Practice for Pickling Typical Products. Copies are available free of charge.

Castings Handbook Revised

Demand for the "Steel Castings Handbook," manual of the steel castings industry, has necessitated a second printing of the completely revised volume compiled and published by Steel Founders' Society of America.

The handbook can be obtained from society headquarters, 920 Midland Bldg., Cleveland 15. Price of the standard edition is $4.00; student copies are available at $1.50 each.

Panama Canal, Pedro Miguel Locks — United Press Acme Photo

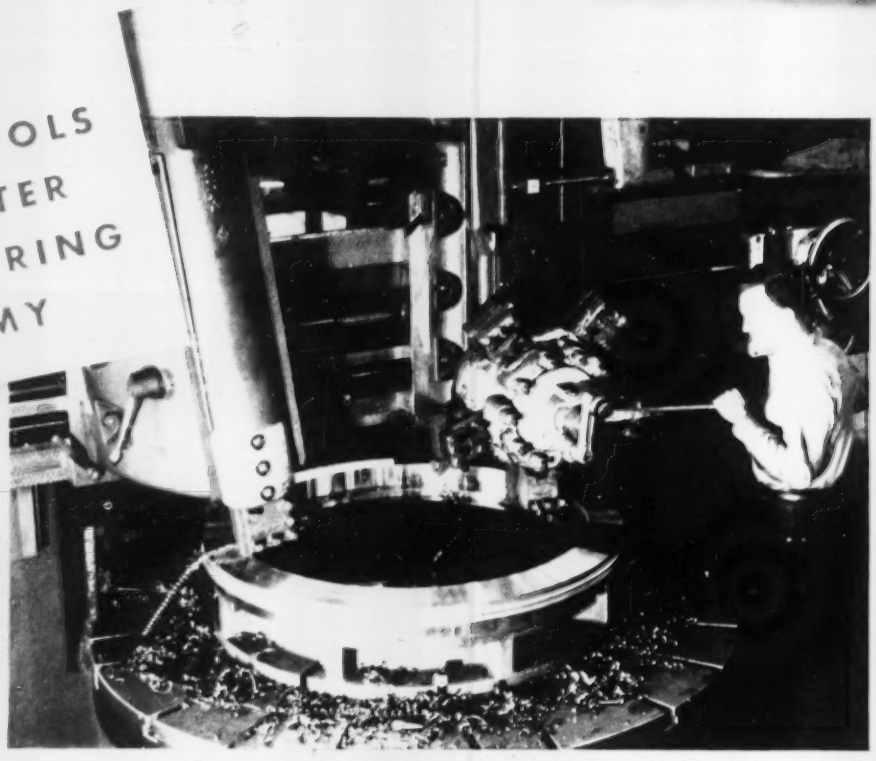
The Invisible Background of Industrial Progress

Panama Canal, a United States acquisition about 1904, was officially opened July 12, 1920. The total cost to our country was $375,000,000. Earth removed was 239,000,000 yards. However, American ingenuity, incentive and industrial progress through Machine Tools and the practical use of mechanical equipment — such as: plows, derricks, stonecutters, drills, shovels, steamboats, dredges, pile drivers, tracklayers, locomotives, steam shovels and other products of mechanical ingenuity realized a 400 year-old dream of a passage between North and South America. In 1949 almost 10,000,000 tons of shipping passed through the Canal from east to west, and from west to east approximately 15,500,000 tons. Statistics show the distance saved between New York and San Francisco is nearly 8,000 miles with only a matter of six to eight hours for a vessel to make the passage. Ships of 1,000 feet in length are accommodated in any of the five locks in the Canal. ★ Today because of *Modern Machine Tools* and mechanical equipment such projects consume considerably less time than "The Big Ditch".

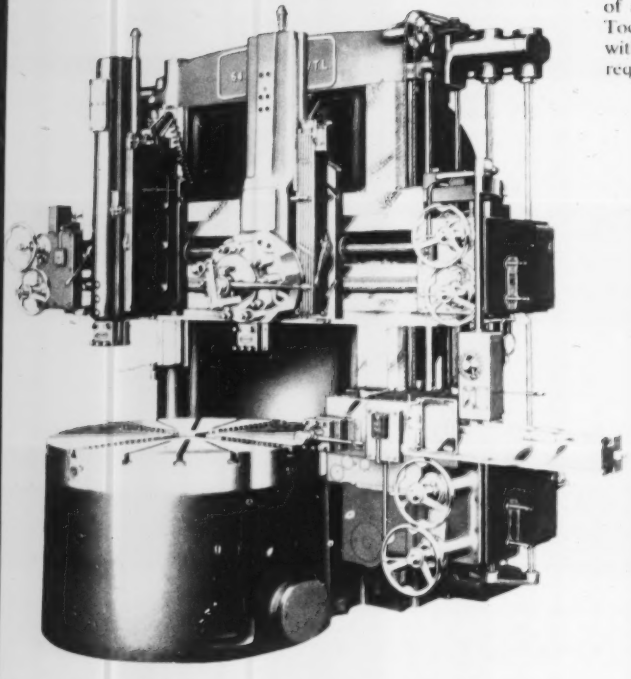
★ *For greater manufacturing economy REFER to next page.*

THE BULLARD COMPANY
BRIDGEPORT 2, CONNECTICUT

BULLARD MACHINE TOOLS FOR GREATER MANUFACTURING ECONOMY



In the background of "Industrial Progress" lies the development of the name Vertical Turret Lathe. This name, an offshoot from the old single-head boring machine, was established in 1909 by the inception of a vertical boring mill having a sidehead, which Bullard pioneered. Today the modern conception is the Cut Master Vertical Turret Lathe with its design and engineering in keeping with manufacturing requirements.



The Cut Master is exactly, in all respects, what its name implies — accurate and efficiently productive. Truly a machine for manufacturing economy. These machines are widely reputed to be of great adaptability on almost all classes of work. Bullard Machines of this type, because of their wide range of sizes, are ideally suited for installation aboard many of the United States ships of defense for their maintenance requirements. Furthermore, Bullard Machines are used in the industries which manufacture for the large construction projects where the accuracy of the finished product determines its reliability for the functions required. Original machining accuracy of work assures reliability with minimum maintenance costs over long periods. Bullard Cut Master Vertical Turret Lathes give assurance to your customer that the product bearing your name is of the highest quality.

BULLARD

Time saved is money earned. Write now for information.

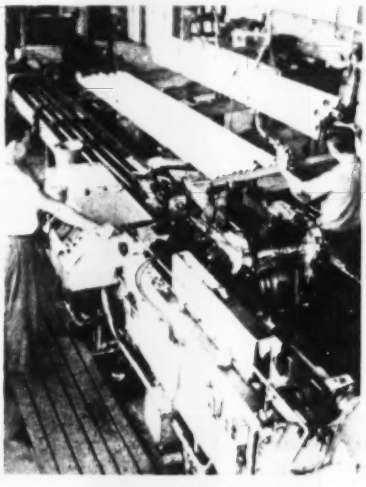
THE BULLARD COMPANY BRIDGEPORT 2, CONNECTICUT

Seamless Sizes Grow

Superior Tube offers light wall up to 2-1/16-inch OD in Monel and stainless

SEAMLESS light wall tubing is moving into size ranges once the exclusive domain of welded grades. Superior Tube Co., Norristown, Pa., is offering outside diameters up to $2\frac{1}{16}$ inches. Previous maximum size offered by specialty tube mills was $1\frac{1}{4}$-inch OD.

Trend toward demanding higher pressures, often exceeding limits for welded tubing, without sacrificing weight is expected to extend applications for large diameter light wall seamless. Greatest present use is for instrument bellows, flexible metal hose and low-pressure heat exchanger tubes.

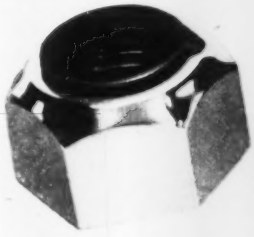


SEAMLESS TUBE REDUCING
. . . larger sizes become available

Superior furnishes the specialty in Monel and in 304, 321 and 347 stainless, with pickled or standard bright finish in three tempers. Wall thickness tolerance is 10 per cent on all sizes. Length ranges from 5 to 22 feet.

Drawing Preparation — Cold drawing the light wall tubing requires special care. Tube stock gets a surface inspection, tests to determine inside diameter condition, degree of anneal and hardness, plus chemical analysis and microscopic inspection. Stock is first carried to tube reducing machine table by bridge crane for reduction by Rock-

A *LOCKNUT* that will hold here will hold any place



1500 blows a minute in limestone ballast is tough punishment. Security Locknuts are used on the Racine Tie Tamper made by the Racine Hydraulic & Machinery, Inc. of Racine, Wis. to hold the bushing that carries the tamping tool.

A Locknut that will hold here, under the pressure of the vibration encountered in heavy railroad work, will hold any place. There is no other locknut or fastener like Security and no other locknut will do what a Security will do.

Security Locknuts are self-locking in any position. They do not require bolt tension to keep them tight. They stay where you wrench them, even in the face of vibration that *destroys* the bolt. A Security Nut can be removed and replaced any number of times without materially loosing the torque or locking power and without injury to the bolt. This means easy maintenance for your customer's customer. Installation is fast—nothing to line up—no extra parts—nothing to shear!

Authoritative tests have proved conclusively the gripping power of Security Locknuts. We would like to have you see them. Made in $\frac{3}{8}$ in. to $\frac{3}{4}$ in. bolt sizes. Fill in the coupon for more details.

What is your toughest fastener problem?

That is the one we want to help you on. Security fastener experts have a long range of experience in problems where other fasteners would not hold.

Challenge us to make it stick!

Are you Cotter conscious?

There may be places where cotters are the only solution but cotters are expensive to install. Security Locknuts eliminate the adjustment of expensive castellated nuts, drilling and weakening bolts and setting cotters. You install Security just like an ordinary nut.

Why destroy the bolt?

Battered up bolt ends mean tough maintenance for your customer. Why peen bolt ends when you can lock the part in place in half the time and still permit easy removal.

One nut does it!

With Security it takes only one nut to hold the job. Just put it on like an ordinary nut. The Security retainer holds it in place and the nut body takes the load. Ask for more complete details. Let us tell you how it's made.

THE SECURITY CAPLOC

Here is a cap nut that locks with the grip of the Security Locknut. It provides locking power at a cost no more than an ordinary acorn nut. Here is the answer to those locations where you want to be sure that protection for bolt ends stays there.

THE SECURITY STUDLOC

The Security Studloc can be adapted to provide a positive lock in counterbores and housings or it can be keyed into work to serve as a simple lock nut. An eliptical, heat treated, spring retainer of highest quality spring steel forced into "round" on installation grips the bolt with a force that defies vibration.

Security
The Nut You Can't Shake Loose

SECURITY LOCKNUT CORPORATION
North Ave. and 15th Ave., Melrose Park, Ill.
Please send me without obligation:
☐ One of your Thread Tolerance Charts.
☐ We have a fastener problem and would like to know more about Security Locknuts.

Company Name
Address
Town Zone State
Signed

Rite process. A tapered mandrel is inserted and tube wall compressed by rocking between two half-round hardened tool steel dies in which a tapered groove forces wall to thin out.

Because first reduction work-hardens material, tubes are carried in ½-ton bundles to electric element furnace where tubing is annealed in cracked ammonia gas atmosphere at 1925 to 2050 F. Water cooling and the pickling process follow.

Cut and Dried — Annealed tube moves to swaging machine, then to pickling house where green oxide is removed by immersion in 7 per cent solution of hydrofluoric acid. Two water baths, flush and forced hot air drying follow.

After drawing, tube is run through Mackintosh-Hemphill straighteners, flare-tested, checked for surface imperfections and tolerances, and hydrostatically checked for leaks and pressure. In addition, samples are taken for metallurgical and chemical lab tests. Abrasive wheels cut tube into final lengths.

JIG and FIXTURE
COMPONENT PARTS
Eliminate the designing and making of clamps and other fixture parts. LODDING makes them for you.
LARGE FACTORY AND DISTRIBUTOR STOCKS ASSURE QUICK DELIVERIES.
LODDING
CLAMP ASSEMBLIES
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showing 365 items that can save you time and money.
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Gaging Soil Corrosion Rate

Rate of weight loss of a piece of steel corroding normally in soil can be measured electrically without actually weighing the metal.

This is a conclusion reached in a laboratory study conducted by National Bureau of Standards, lending further evidence that the electrochemical theory of corrosion applies generally to soils. Although the NBS measurements were restricted to the laboratory, their success suggests the possibility of practical applications, such as determining corrosion rate of a tank or other underground structure without need for visual inspection.

Although ferrous metals corrode at a constant rate in some soils, in other areas the corrosion gradually slows and in time may virtually cease. Actually weighing or inspecting an object that has been buried for years will indicate total corrosion. But it will not show how rapidly it has been corroding just prior to inspection. Thus, if the electrical method proves practical for field as well as laboratory determinations, it will have the advantage of measuring the present corrosion rate — likely to be of greater practical interest than the corrosion history.

Low-Temp Weld Metals Review

Evaluation of the properties of weld metals for low-temperature service is featured in the winter 1953 issue of the *Alco Products Review*, published by American Locomotive Co., Schenectady, N. Y.

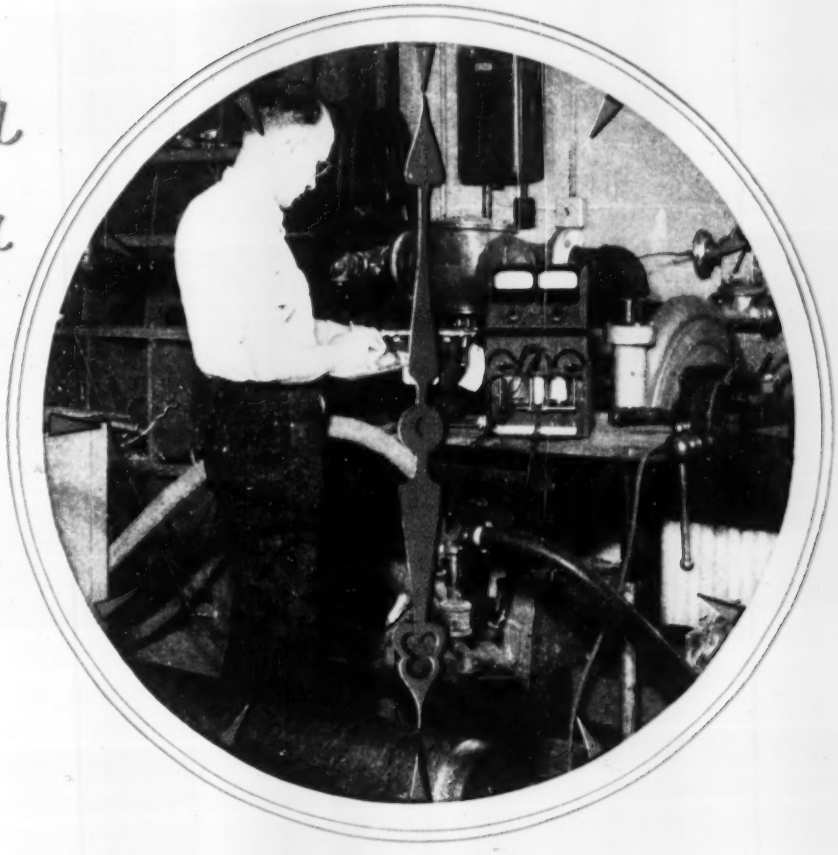
Paper discusses materials used in the fabrication of pressure vessels for low-temperature service, investigation of ferritic electrodes to determine properties of deposited weld metals for low-temperature service, and the Charpy notched-bar properties of weld metals at various temperature levels.

AMA Plans Market Talks

Results of a nationwide consumer market survey completed by U. S. Department of Commerce and Committee for Economic Development will be presented to executives attending American Management Association's national market conference. Sessions are scheduled Feb.

ECLIPSE FUEL ENGINEERING WRITES:

"Heat Prover Completed a 30 Hour Burner Test In Just 6 Hours!"



Amazing Cities Service Heat Prover Works 5 Times As Fast As Old Method... More Accurate, Too!

Robert W. Pixler, Laboratory Supervisor for Eclipse Fuel Engineering Company, Rockford, Illinois writes:

"It did not seem possible that an instrument that is so fast and direct-reading could possibly have the accuracy we demand. But, we found the Heat Prover equally exact, possibly even more exact, than standard commercial testing equipment.

"Our test work with previous instruments was a long, drawn-out affair. But with the Heat Prover, we completed what would normally have been a 30-hour test in just 6 hours! ...and we doubt that our old equipment could have maintained the accuracy delivered by Cities Service Heat Prover."

WHEREVER A FURNACE OPERATION IS INVOLVED, the Heat Prover can help increase productivity by providing:

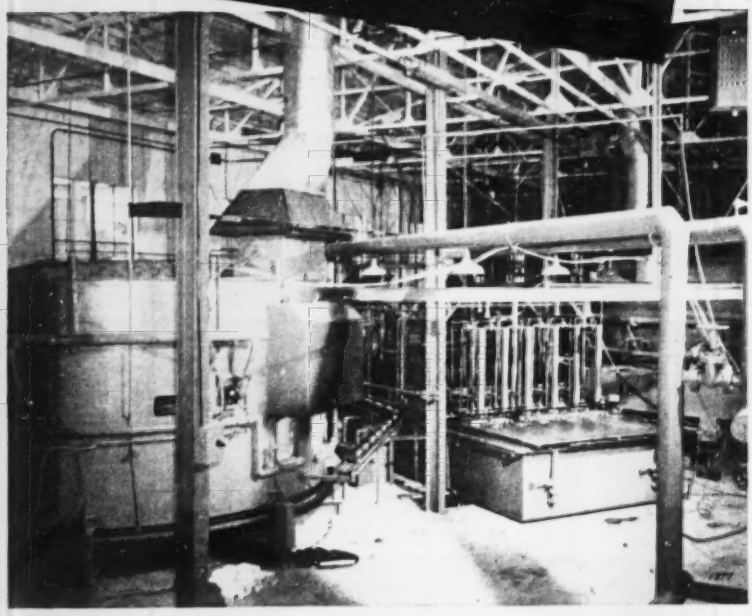
- **Rapid, continuous sampling**
- **Simultaneous reading of oxygen and combustibles**
- **Direct measurement of oxygen and combustibles**
- **Easy portability**
- **No maintenance; no re-calibration**

For details, contact nearest Cities Service office or write Cities Service Oil Company, Dept. B18, Sixty Wall Tower, New York City 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Accurate, Uniform Heating
WITH **GASMACO** FURNACES



In the production of 105 mm shells, accuracy and uniformity of heating are of vital importance. To obtain necessary tolerance, without the use of valuable alloys, two Gasmaco furnaces are employed — one for hardening and the other for drawing. A quench tank is located between the furnaces on this operation, which requires the services of only two men

The shells are hardened, quenched and drawn in a vertical position to ensure positive uniformity and accuracy. The result is better quality, faster production and lower cost.

For your heat treating problems and other furnace requirements, investigate the many advantages of Gasmaco. Call or write today.

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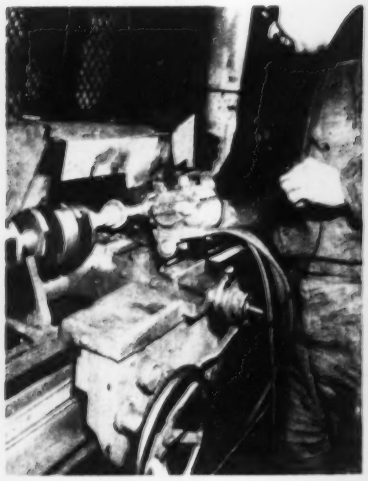


Faster Buildup

Crankshaft salvage that formerly required 1 hour for a shaft is completed by metallizing at a rate of 5 to 10 minutes per shaft. Preparation requires only an emery cloth shine. Molybdenum metallizing wire then is sprayed on. About 0.025-inch is usually required for finish allowance in this installation made by Metallizing Engineering Co. Inc., New York

9-11 at Hotel Statler, New York.

M. Joseph Meehan, director of the Commerce department's office of business economics, will summarize findings of the study. Topics deal with markets that will be available to, or can be stimulated by manufacturers as their defense production slackens.

Acid Immersion Heater Built

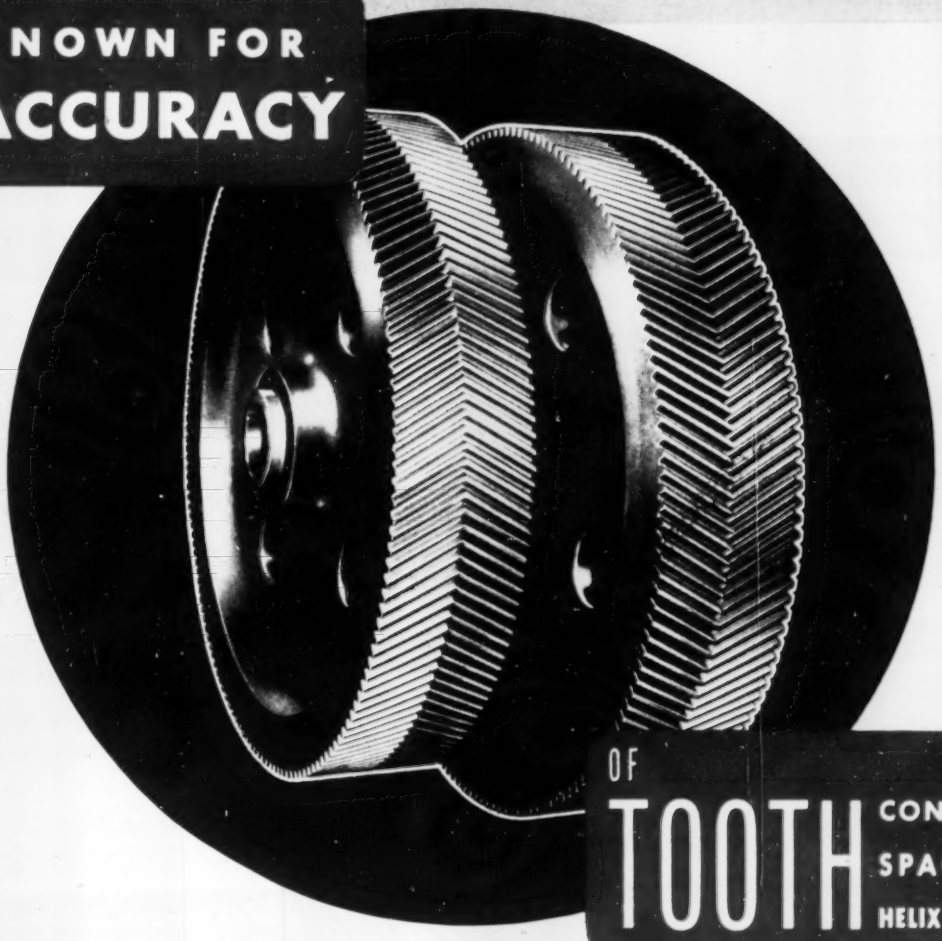
Pilot model of a Ferrolum lead-clad steel direct fire gas burner for heating corrosive acid solutions is a development of Knapp Mills Inc., New York. Taking advantage of the fact that direct fire is a fast and efficient form of heating, the burner admits a gas flame through the wall of a tank into the Ferrolum tube which is immersed in the solution.

Previously use of this type of heater in corrosive liquids was handicapped by the absence of a unit which would have good resistance to a wide variety of concentrations of corrosives at various temperatures.

Ferrolum lead clad steel combines the strength of steel with the ability of lead to resist corrosives.

PHILADELPHIA HERRINGBONE GEARS

KNOWN FOR ACCURACY



OF TOOTH CONTOUR SPACING HELIX ANGLE

Continuous tooth construction gives great load carrying capacity with a smooth flow of power. Made by Philadelphia, their high quality results from selected materials, controlled manufacture and careful inspection.

Philadelphia Continuous Tooth Herringbone gears are available in sizes up to 60" diameter, 18" face.

For full information send for our Gear Catalog.

Philadelphia Gears

Philadelphia Gear Works, INC.

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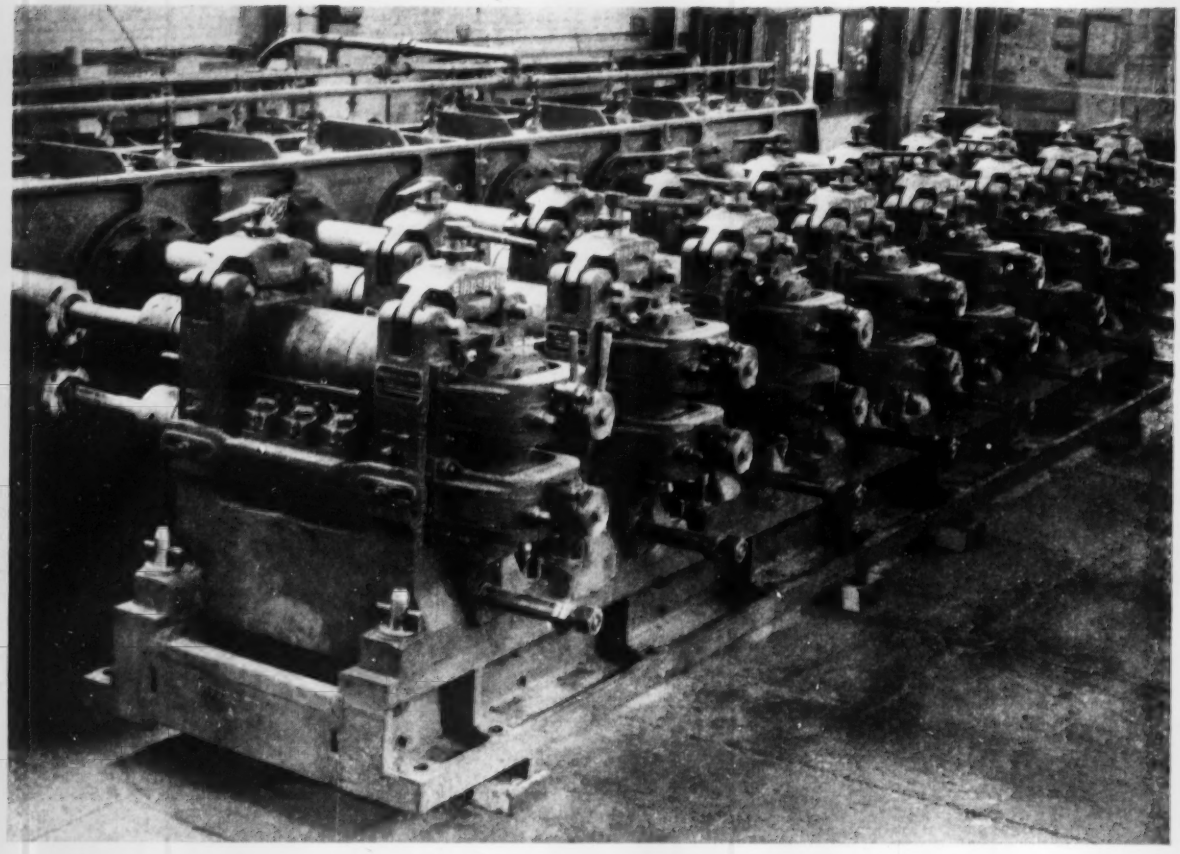
NEW YORK · PITTSBURGH · CHICAGO · HOUSTON · LYNCHBURG, VA.

Industrial Gears and Speed Reducers
LimiTorque Valve Controls



MODERNIZE YOUR ROD MILL

for Increased Production... Lower Costs

Birdsboro's advanced engineering developed a new high speed finishing train, coilers and conveyors to modernize an existing mill. The eight stand finishing train is shown above at shop assembly.

If your production is lagging — or you find operating and maintenance costs are top heavy, call on Birdsboro. We are well equipped and have the engineering skill to modernize existing equipment—or replace it with the most up-to-date, efficient steel mill machinery.

BIRDSBORO

STEEL FOUNDRY & MACHINE CO.

Birdsboro, Penna.

Offices in Birdsboro, Pa. *and* Pittsburgh, Pa.

STEEL MILL MACHINERY

Designers and Builders of:

Steel Mill Machinery • Crushing Machinery • Rolls
Hydraulic Presses • Special Machinery • Steel Castings

MM 21-51-R

Since the lead is chemically bonded to the outside of the pipe, heat transfer is reported excellent. Heat developed in the tube is dissipated so rapidly by the surrounding liquor that it prevents injurious effect on the lead itself.

GE Readies Motor Repair Plan

A program to provide General Electric Co.'s customers with prompt service on broken down electric motors has been announced by W. D. Lee, small and medium motor department.

Called the small motor service station plan, the program is expected to improve previous exchange plans by providing a more complete network of repair stations for fractional horsepower and small integral horsepower motors.

Under the plan, an authorized G-E small motor service station will provide in- and out-of-warranty service on motors, generators and motor-generator sets of 1/20 to 15-hp and 1/4 to 10 kw. The service will include general repairing, furnishing renewal parts and exchanging motors for those that are inoperative.

Five Steps to Cost Control

"Manufacturing Cost Control," a 4-page folder designed to show management how to cut costs by instituting adequate manufacturing cost control systems is available from Harold F. Howard Co., Detroit. Included in the folder prepared by the industrial and management consulting firm are breakdown charts, cost-control forms and performance curves.

A five-step method for setting up a control system is described in detail. Typical examples of practices that cost controls should locate and avoid include poor materials handling techniques, overtime charges, excess idle time, dishonest employees and small tool losses.

Ventilator Tests Outlined

Adoption of test procedures for power roof-ventilators having centrifugal or axial-type wheels is announced by National Association of Fan Manufacturers Inc. and Propeller Fan Manufacturers' Association, Detroit. To provide for testing ventilators having centrifugal

OUT OUR WAY
I CAN'T DRAW GOOD SO I'M SHOWIN' YOU TH IDEA I GOT WITH THIS SCRAP PILE STUFF!
WAIT, SEBRING-- WE MISSED SOME OF IT!
WAIT, TALK SLOW-- I WANT TO BE SURE I UNDERSTAND IT!
THEY'LL TRY TO KEEP HIM HOLDIN' THAT LIP ALL DAY FOR A JOKE LUCKY WE HAVE SOL-SPEEDI-DRI OR HE'D SLIP BEFORE HE STARTED!
THE CONTINUED STORY
J.R.WILLIAMS
Sales leader—because it's value leader!
SOL·SPEEDI·DRI
You buy an oil and grease absorbent because you don't want to take chances. So don't take chances with the absorbent you buy! Use Sol-Speedi-Dri to keep your floors clean and slip-proof. It leads the field, because pound for pound, dollar for dollar, it gives you more for your money, all factors considered. Laboratory control keeps quality always uniform. Send coupon today for free Sample!
SPEEDI-DRI CORP.
WHEN YOU BUY, BE SURE IT'S
SOL-SPEEDI-DRI
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Warehouse stocks maintained in principal cities of the United States and Canada
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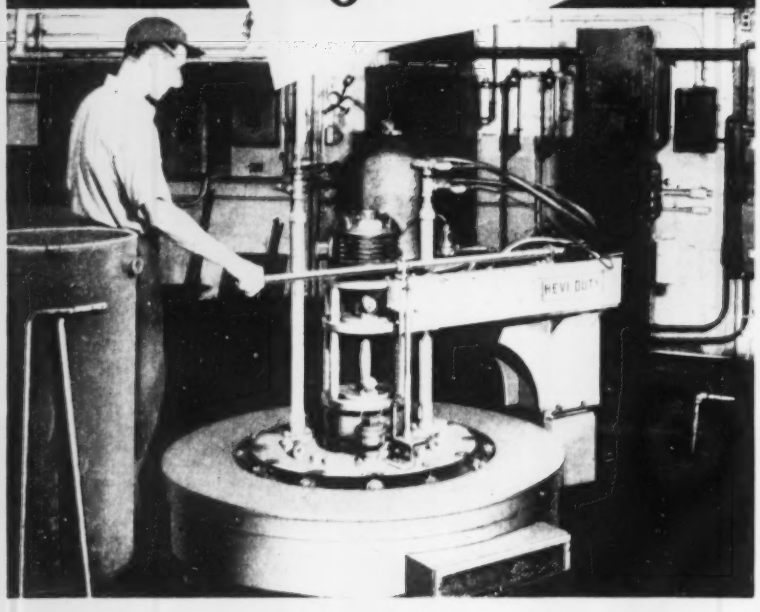

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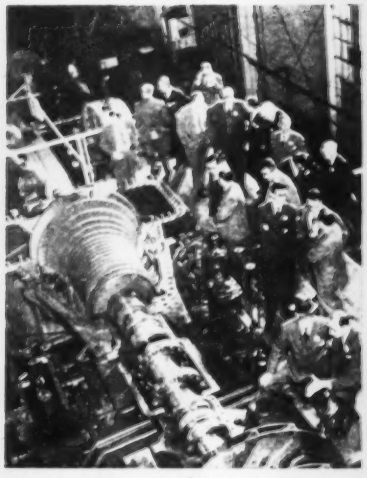

Turbo-Blower for Armco

Steel mill and engineering company representatives inspect a big blast furnace turbo-blower built at De Laval Steam Turbine Co.'s Trenton, N.J., plant for Armco Steel Corp. One of a pair of blowers built for Armco, the unit is five-stage, with rated capacity to deliver 121,000 cfm of air at 35 pounds psig discharge pressure

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or axial-type wheels, with and without inlet duct, four arrangements of test equipment are illustrated. Procedures are outlined in NAFM bulletins 110 and 113.

Lister Engines Get U.S. Outlet

Design features of the new Freedom Range Lister diesel engines have been announced by National Supply Co.'s Engine Division, Pittsburg. It recently became sole U. S. distributor for Lister diesels. The engines are manufactured by R. A. Lister & Co. Ltd., Dursley, Gloucestershire, England.

The engines, made in 1, 2, 3, 4 and 6 cylinders, in a range from 8 to 54 hp, were specially designed for operation at high speeds, and at tropic to Arctic temperatures, without impairing reliability. Each cylinder develops 9 hp at 1800 rpm, except the single cylinder engine which develops 8 hp at 1500 rpm.

Mercury Salvage Continues

Mercury salvage program initiated by General Dry Batteries Inc., Cleveland, will be continued through 1953, according to Carl Brooks, vice president, sales. Started in 1951 to combat inflated mer-

cury prices, the program operates through 3800 hearing aid dealers across the nation.

The firm reports it has received several million mercury cells from hearing aid dealers since the start of the drive.

Plastics Men Convene Feb. 18-20

Reinforced Plastics Division, Society of the Plastics Industry Inc., is holding its eighth annual technical and management conference Feb. 18-20 in Washington at the Shoreham Hotel. Military interest in products made from reinforced plastics means this year's meeting should enjoy the largest attendance in its history.

First two days will emphasize the military and technical side of the industry, and sessions on Feb. 20 will cover management problems in the reinforced plastics field.

During the three-day conference there will be a special exhibit of reinforced plastics products with emphasis on those now manufactured for the military, and civilian products which could be used for military applications.

Control Techniques Outlined

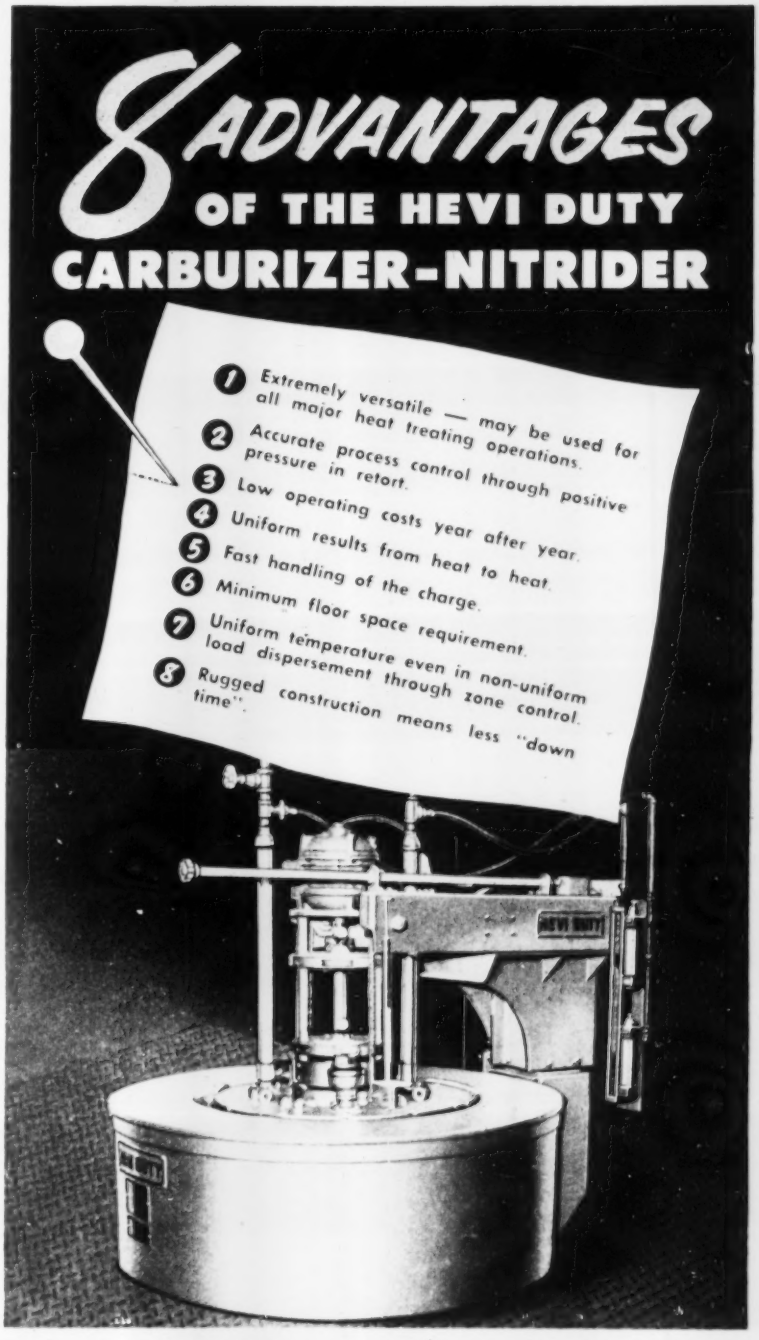
Techniques of using industrial controls will be chief topic of an institute bearing the theme, "The Automatic Factory," at University of Wisconsin, Madison, Wis., Feb. 10-11. Conducted by the university's extension division and college of engineering, the program will draw Wisconsin industry men to help demonstrate recent developments in automatic machine and process control.

Course Teaches Cobalt-60 Use

A two-day course designed to provide basic knowledge needed to use Cobalt-60 sources in industrial radiography is being offered by Tracerlab Inc.

Necessity for such a course, the company says, is occasioned by the growing use of Cobalt-60 as a nondestructive testing means and the difficulty industry has in obtaining competent radiographers skilled in the use of gamma radiation.

The course of study covers such topics as radiological safety, handling of sources, exposure techniques, film and screen uses, radia-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Handling: No Weak Links

Modern handling methods move commercial and industrial floor cleaning equipment from receipt of material to product shipment in the new Geerpres Wringer Inc. plant at Muskegon, Mich. In use at various points of production are power conveyors, as above, fork and air-hydraulic lift devices and wheeled floor conveyors

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tion survey meters, practice in exposing and film development and evaluation.

Inquiries concerning the program should be directed to the firm at 130 High St., Boston, or to its offices at 2295 San Pablo Ave., Berkeley, Calif., where the same course will be given.

Abrasive Lists Simplified

Simplified lists of flint, emery and other coated abrasives are included in a recommendation published by the Commodity Standards Division, Office of Industry & Commerce, U. S. Department of Commerce. For flint and emery-coated categories, the recommendation gives class of goods, type of backing, sizes of sheets and rolls, type of coating and grade number in which each item is available.

Purpose of the current revision is to change the grade designation for certain flint goods from customary 10 grades to five grades. These will be extra-fine, fine, medium, coarse and extra coarse. These lines are used for nontechnical applications where many grain size subdivisions are said to serve no useful purpose.

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New Books

Advanced Mathematics

METHODS OF APPLIED MATHEMATICS, by Francis B. Hildebrand; cloth, 523 pages, 5½ x 8½ inches; published by Prentice-Hall Inc., New York, for $7.75; available from STEEL, Penton Bldg., Cleveland 13, O.

"The principal aim of this volume," states the author, "is to place at the disposal of the engineer or physicist the basis of an intelligent working knowledge of a number of facts and techniques relevant to four fields of relatively advanced mathematics."

Rigorous proof is provided when it is believed that such proof will be helpful and comprehensible to the student. The author also states the desired result precisely and indicates if possible, why that result may be formally expected to be correct. Material is organized in such a way that certain topics may be omitted. There is very little interdependence among the chapters.

Chapter headings are: Matrices, Determinants and Linear Equations; Calculus of Variations and Applications; Difference Equations; Integral Equations.

Engineering Materials Textbook

TEXTBOOK OF ENGINEERING MATERIALS, by Melvin Nord; cloth, 518 pages, 6 x 9 inches; published by John Wiley & Sons Inc., New York, for $6.50; available from STEEL, Penton Bldg., Cleveland 13, O.

Here the subject of engineering materials is presented in a fundamental, coherent manner. It achieves a balanced treatment, midway between "handbook engineering" and abstractions which never quite become specific. The book is written as a one-semester course for all engineering students to introduce them to the engineering point of view early in their careers.

The book begins at an elementary level, introducing basic concepts in physics, chemistry, geology and various fields of engineering. These concepts are applied to problems of occurrence, production, properties and uses of various materials of engineering.

1953 Credit Manual

CREDIT MANUAL OF COMMERCIAL LAWS, 1953; cloth, 796 pages, 6 x 9 inches; published by National Association of Credit Men, New York, for $10.

The 45th annual edition of this digest of laws affecting credit and financial operations of business firms gives the latest information on re-

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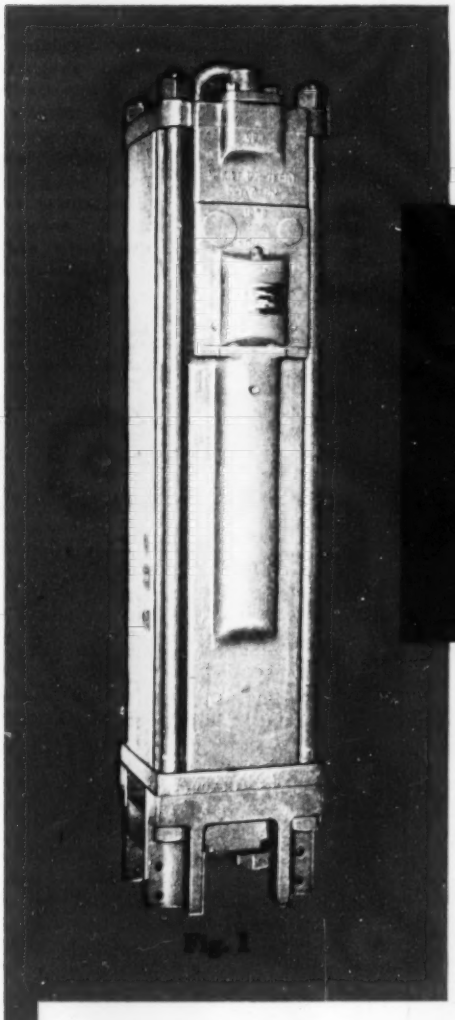

Fig. 1

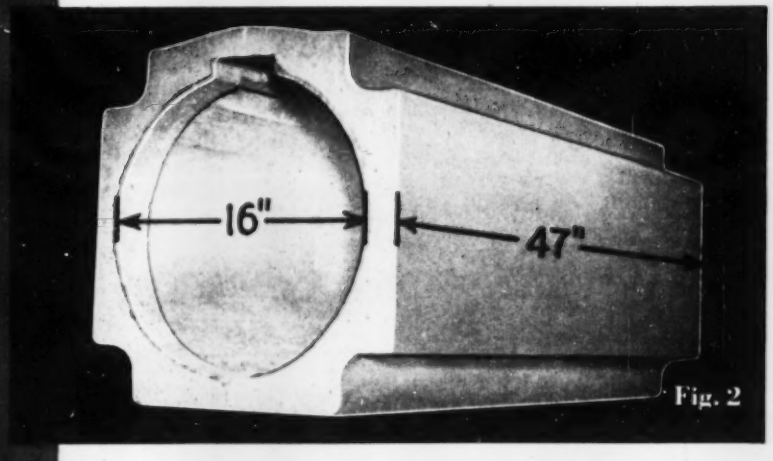

Fig. 2

In the pile driver illustrated (Fig. 1), built by McKiernan-Terry Corporation, Dover, New Jersey, the severe working conditions imposed upon such units require complete dependability in operation. The top and bottom (Fig. 2) cylinders are vital units in the functioning of the equipment and must be dense, pressure tight, strong and machinable. Both cylinders are Meehanite castings, each weighing about 2,000 pounds.

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E. W. Bliss Co.	Hastings, Mich. and Toledo, O.
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Compton Foundry	Compton, Calif.
Continental Gin Co.	Birmingham, Alabama
Crawford & Doherty Foundry Co.	Portland, Oregon
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De Laval Steam Turbine Co.	Trenton, New Jersey
Empire Pattern & Foundry Co.	Tulsa, Oklahoma
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Koehring Company	Milwaukee, Wisconsin
Lincoln Foundry Corp.	Los Angeles, California
London Concrete Company, Ltd.	Brantford, Ontario
E. Long Ltd.	Orillia, Ontario
Otis Elevator Co., Ltd.	Hamilton, Ontario
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The Henry Perkins Co.	Bridgewater, Massachusetts
Pohlman Foundry Co., Inc.	Buffalo, New York
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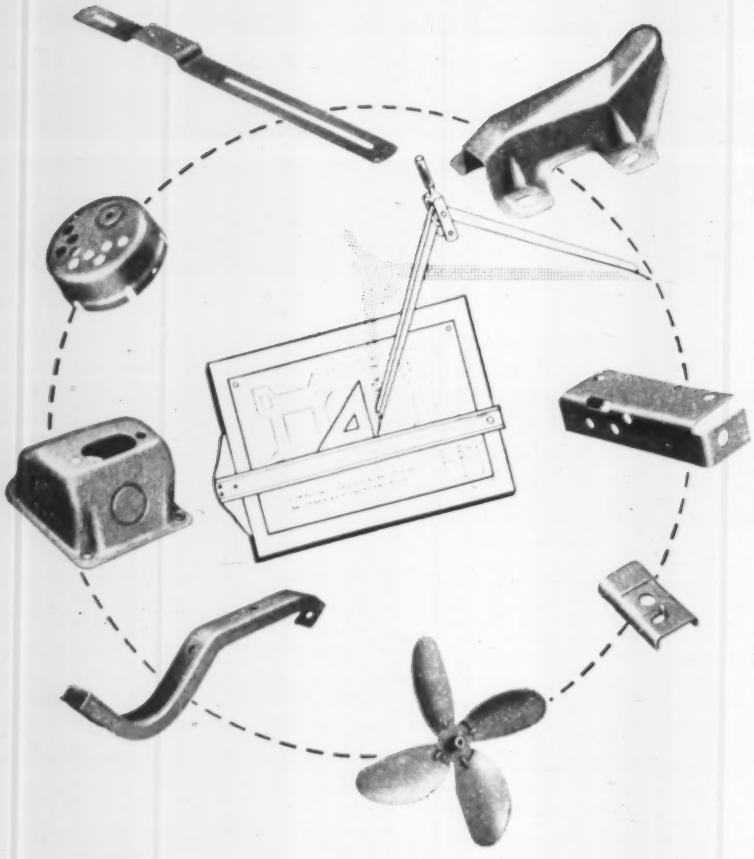

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cent amendments and new laws, both state and federal. It tells how to contact the Army, Navy and Air Force for defense contracts. The manual tells how defense production loans are obtained under regulation V. Among the important subjects covered are: New federal fair trade law, many amendments to the National Bankruptcy Act; new price-and-wage-control setup under the 1953 National Defense Act; many revisions in state laws pertaining to sales, credits, collections, assignments, judgments, notes, liens and other credit problems that arise regularly in business.

Two chapters cover bonds on public improvements, both federal and state. A complete summary of state bond laws that provide protection to material suppliers, revised to include all 1952 changes is a feature of this section. Credit problems met in export and import trade are covered in another extensive chapter.

Physical Metallurgy of Metals

NONFERROUS PHYSICAL METALLURGY, by Robert J. Raudebaugh; cloth, 345 pages; 6 x 9 inches; published by Pitman Publishing Corp., for $6.50; available from STEEL, Penton Bldg., Cleveland 13, O.

More important nonferrous metals are discussed in this book from the aspect of physical metallurgy. Particular emphasis is placed on recent developments in their processing, fabrication and application. An extensive bibliography is presented at the end of each chapter.

Nonferrous metals covered include: Aluminum and its alloys; magnesium and its alloys; copper and its alloys; nickel and nickel alloys; alloys of cadmium, lead, tin and zinc; some less widely produced nonferrous metals and their alloys; powder metallurgy and refractory metal composites.

Why Businesses Live

LONGEVITY OF MANUFACTURING CONCERNS IN ALLEGHENY COUNTY, by William W. Frasure; cloth, 226 pages, 6 x 9 inches; published by University of Pittsburgh Press, Pittsburgh, Pa., for $4.50; available from STEEL, Penton Bldg., Cleveland 13, O.

Why does a business live and grow? Why does a business die? The answers to these questions are explained by the author who used Allegheny County, Pa., as his test laboratory. The county is industrially significant for volume and value of manufacture and also as a cross-section of industrial employment.

The author analyzed factors that have contributed to survival within each manufacturing group and em-

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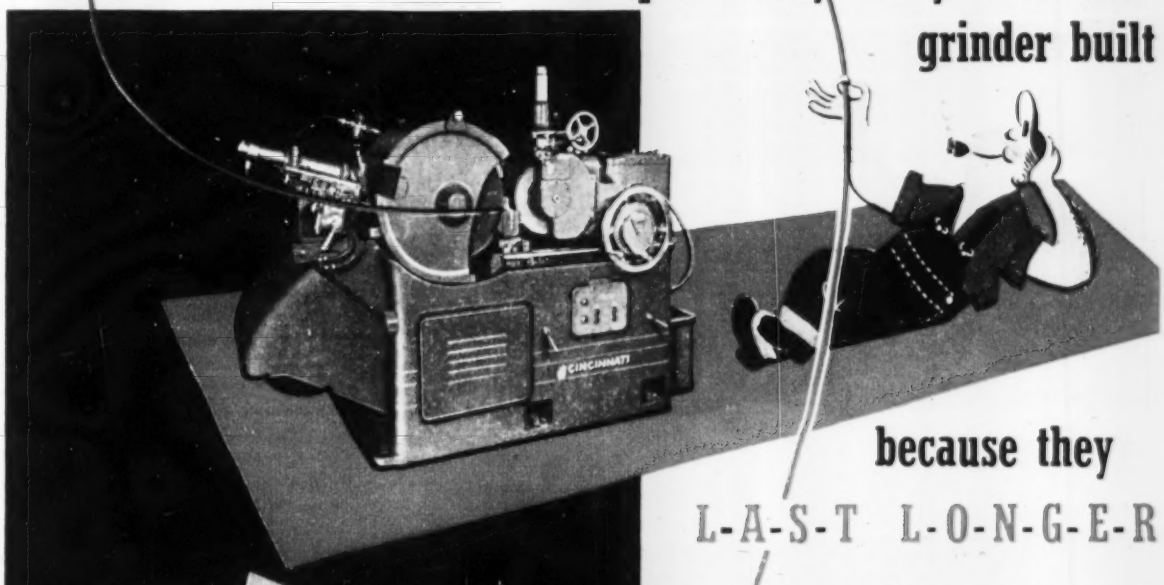

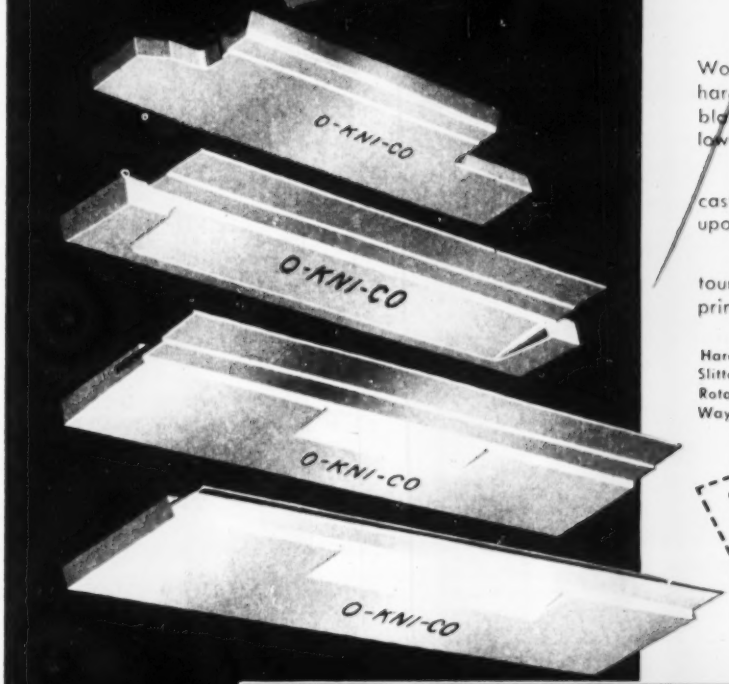

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phasizes fourteen longevity factors he considers significant.

Dr. Frasure has also included analysis of individual companies within the county that have survived the precarious period from 1873 to 1947

Renegotiation Study

HOW TO HANDLE RENEGOTIATION, by William J. Casey and C. Richard Gunzer, flexible cover, 204 pages, 9¼ x 11¾ inches; published by Business Reports Inc., New York, for $24.

This study analyzes the renegotiation results and arguments in over 200 cases which government contractors have filed in the Tax Court. Survey shows how renegotiations affect company profits. It also contains a breakdown of Securities and Exchange Commission figures on company profits and overhead expenses into 112 industry groups. It shows the ratio of profits before taxes to sales and to net worth for the seven years running from 1944 through 1950.

The study shows how a company can develop a case to justify a higher than normal rate of profit by showing how it qualifies on statutory factors spelled out in the renegotiations law. Thus, if a company can show that it assumed extra risks, its costs were reasonable, its operations efficient, that it made special contribution to the defense effort and its business operation differed in character from that prevailing normally in its industry, it may be able to justify a case for higher than normal margin of profit.

Symposium on Metals

ELASTICITY IN ENGINEERING, by Ernest E. Sechler; cloth, 419 pages, 6 x 9 inches, published by John Wiley & Sons Inc., New York, for $8.50; available from STEEL, Penton Bldg., Cleveland 13, O.

Written for engineers working in fields of structural analysis, this book brings together the material an engineer needs for a broad background of knowledge based on fundamental theories of stress and deformation of elastic bodies under load. The material is presented in three parts.

The first part discusses the basic equations in Cartesian, cylindrical and spherical co-ordinates that are necessary for the solution of elastic problems. The second part discusses the elastic problems of stable structures and shows where exact solutions are possible, indicates types of approximate solutions and sets up boundaries between which various levels of engineering accuracy are obtained. The third section deals in a similar manner with the problems of unstable elastic structures.

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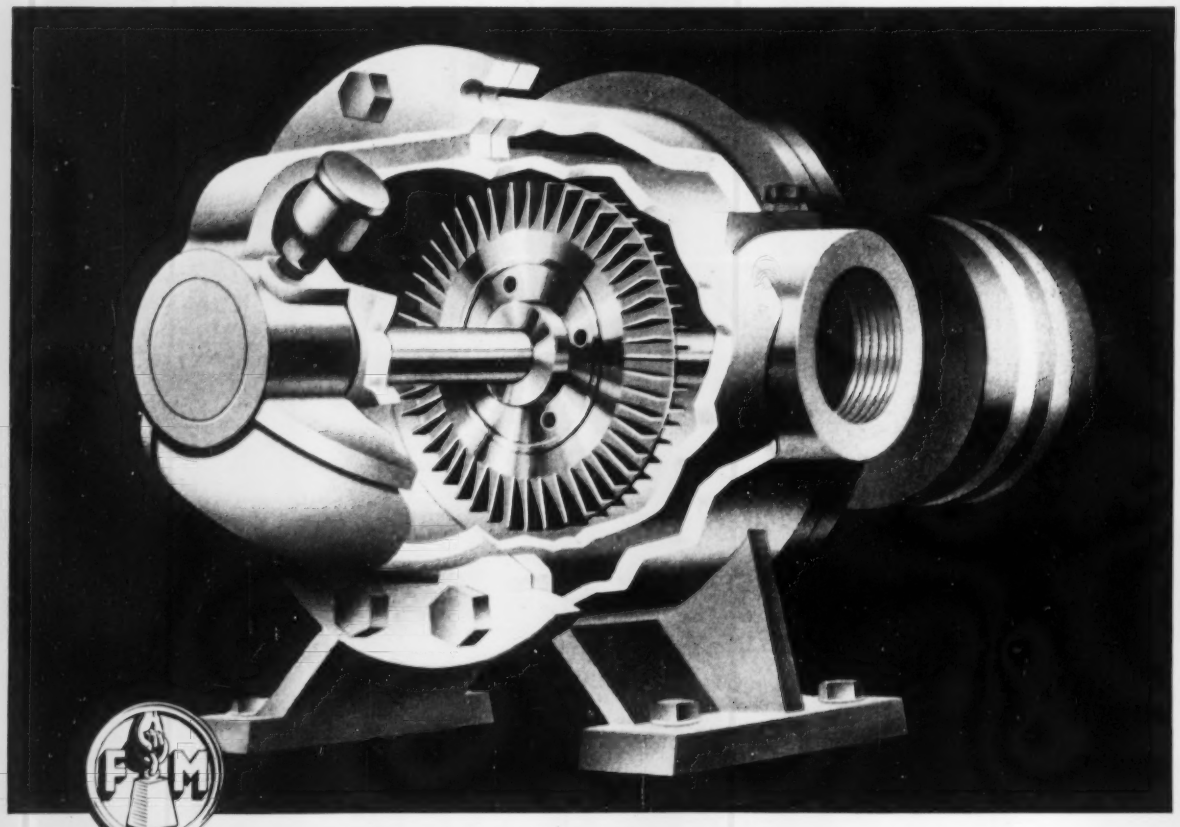

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CALENDAR
OF MEETINGS

February 4-6, Computor Conference Committee, Institute of Radio Engineers and American Institute of Electrical Engineers: Western computor conference, Hotel Statler, Los Angeles. Information: G. H. West, Public Relations Dept., Consolidated Engineering Corp., Pasadena 8, Calif.

February 6-7, American Foundrymen's Society: California Regional Foundry Conference, Hotel Claremont, Berkeley, Calif. Information: John Bermingham, AFS, 594 Market St., San Francisco 5.

February 9-11, American Road Builders' Association: Annual meeting, Hotel Statler, Boston. Association address: 1319 F St., NW, Washington 4. Secretary: Gen. Eugene Reybold.

February 15-19, Automotive Electric Association: Annual meeting, Edgewater Beach hotel, Chicago. Association address: 802 Michigan Bldg., Detroit 26. Secretary: S. W. Potter.

February 16-19, American Institute of Mining & Metallurgical Engineers: Annual meeting, Hotel Statler, Los Angeles. Institute address: 29 W. 39th St., New York 18. Secretary: E. H. Robie.

February 16-19, Industrial Ventilation Conference: Michigan State College, E. Lansing, Mich.; Co-sponsor: Division of Industrial Health, Michigan Dept. of Health. Information: K. E. Robinson, Division of Industrial Health, Lansing 4.

February 18-20, Society of the Plastics Industry Inc.: Annual reinforced plastics conference, Shoreham hotel, Washington. Society address: 67 W. 44th St., New York 36. Executive vice president: William T. Cruse.

March 2-6, American Society for Testing Materials: Spring meeting, Hotel Statler, Detroit. Society address: 1916 Race St., Philadelphia. Secretary: Robert J. Painter.

March 2-6, Pittsburgh Section, American Chemical Society and Spectroscopy Society of Pittsburgh: Pittsburgh conference on analytical chemistry and applied spectroscopy, Hotel William Penn, Pittsburgh. Information: L. E. Pitzer, U. S. Steel Co., 525 Wm. Penn Place, Pittsburgh 30.

March 3-5, Society of Automotive Engineers: National passenger car, body and materials meeting, Hotel Sheraton-Cadillac, Detroit. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

March 6, Bituminous Coal Research Inc.: Annual meeting, Netherland Plaza hotel, Cincinnati. Institute address: 2600 First National Bank Bldg., Pittsburgh 22. Secretary: C. A. Reed.

March 8-11, American Institute of Chemical Engineers: Annual spring meeting, Hotel Buena Vista, Biloxi, Miss. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

March 11, Foundry Education Foundation: Annual meeting and technical, university & industry advisory committee conference, Hotel Cleveland, Cleveland. Foundation address: Terminal Tower, Cleveland 13. Executive director: George K. Dreher.

March 11-12, Society of the Plastics Industry Inc.: Annual Canadian conference, General Brock hotel, Niagara Falls, Canada. Society address: 67 W. 44th St., New York 36. Executive vice president: William T. Cruse.

March 15-19, American Chemical Society: Spring meeting, Hotels Statler and Biltmore, Los Angeles. Society address: 1155—16th St. N.W., Washington 6. Assistant secretary: R. M. Warren.

March 16-18, National Association of Waste Material Dealers: Annual meeting, Hotel Conrad Hilton, Chicago. Association address: 271 Madison Ave., New York 16. Secretary: Clinton M. White.

March 16-20, National Association of Corrosion Engineers: Annual conference, Hotel Shelton, Chicago. Association address: 919 Milam Bldg., Houston 2. Secretary: A. B. Campbell.

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As "Boss" of our warehouse, the Superintendent is always ready to give you prompt, efficient day-to-day service *with special provisions* to meet your emergency rush requirements. Just contact your U.S. Steel Supply salesman and he'll see that the services of the Warehouse Superintendent and *all* the personalized services of U.S. Steel Supply are put to work as needed to meet your requirements.

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UNITED STATES STEEL

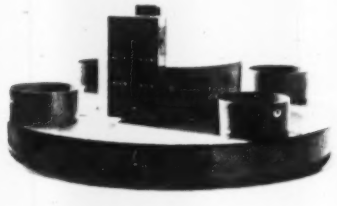
NEW PRODUCTS and equipment

Reply cards on page 163 will bring you more information on any new products and equipment in this issue

Centrifugal Casting Machine

. . . semiautomatic in operation

This vertical, four-spindle turntable type semiautomatic centrifugal casting machine is used to make steel castings. Same type machine can be used to make ferrous as well as nonferrous centrifugal castings in sand or permanent molds. Machine automatically indexes 90 degrees and stops. When spindle approaches pouring station, it automatically comes up to spinning speed. When metal is poured, pushbutton initiates indexing for the next 90 degrees.



Poured mold continues to spin until metal has solidified and approaches casting removal station. As the mold approaches this station, it is braked to a stop. Centrifugal Casting Machine Co., Dept. ST, Box 947, Tulsa, Okla.

USE REPLY CARD—CIRCLE No. 1

Horizontal Master Comparator

. . . applies constant pressure

Friction-free sensitivity of this horizontal comparator is designed to assure repetitive accuracy. All amplification is accomplished by an electronic circuit. A constant pressure is applied to the workpiece sides by each contact at every point of measurement.

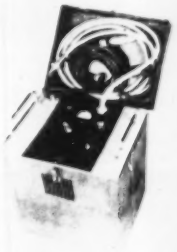
Operator has a selection of four magnifications: 500, 1500, 5000 and 15,000 to 1 all on the same meter. These magnifications, with good measuring contact range, make it possible for the operator to use

the same instrument for tracing work from rough grind to finished lap. Federal Products Corp., Dept. ST, 1144 Eddy St., Providence 1, R. I.

USE REPLY CARD—CIRCLE No. 2

Cable Proof Tester

. . . saves service outages



Cable fault-finder and direct-current proof test unit is an impulse or surge generator designed to locate faults quickly and accurately, and prooftest to locate incipient faults, saving service outages. A cracking noise repeated at about 1 to 3-second intervals is produced at location of the fault.

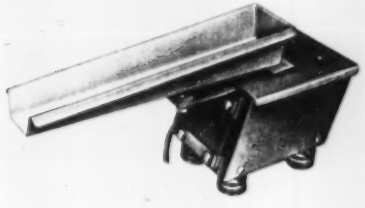
Operator follows the route of the disconnected cable until he locates exact faulty spot. Tester is harmless to good insulation. Electrical Distributors Co., Dept. ST, Liberty Trust Bldg., Philadelphia 7, Pa.

USE REPLY CARD—CIRCLE No. 3

Vibrating Feeder

. . . feeds 500 pounds per hour

Electromagnetic vibrating principle employed by the manufacturer in its larger models is applied to the small Vibratory feeder model F-00. Feeding capacity reaches 500 pounds per hour of bulk material to various types of industrial processing equipment.



The compact unit is $7\frac{1}{4}$ inches high, about 14 inches long and weighs 14 pounds. These dimensions make it suitable for incorporation into weighing and packaging machines and other types of processing equipment. Control of material flow rate from the feeder is exercised by a rheostat in the separate controller. Syntron Co., Dept. ST, Homer City, Pa.

USE REPLY CARD—CIRCLE No. 4

Greaseless Composition

. . . for buffing, polishing

Acme greaseless composition for buffing and polishing adheres to the wheel face to form a heavy fast drying head which does not

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NEW PRODUCTS and equipment

fly off and remains firm in warm weather. Composition also features a consistently sized abrasive. It may be used on brushes, buffing wheels and for hand buffing. Hanson-Van Winkle-Munning Co., Dept. ST, Matawan, N. J.

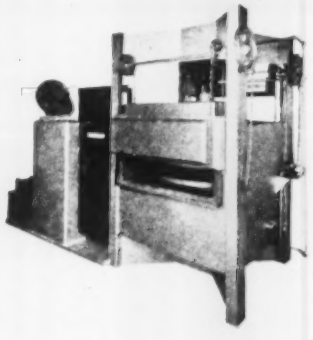
USE REPLY CARD—CIRCLE No. 5

Flattening, Tempering Furnace

. . . gas-fired recirculating

Furnace has 350 to 1000 F temperature range, is used for flattening and tempering large, thin, circular pieces. A gas-fired recirculating type, the burner fires into a combustion chamber on the inlet side of the recirculating fan. Combustion blower is mounted on top of the air duct.

Inside the furnace are two large circular cast iron dies, 42 inches di-



ameter. One is fastened to the bottom end of the cylinder rod with a ball socket joint. The other, the bottom die, rests on a steel structure but is not fastened rigidly. Doors on both sides provide easy access from either side. Temperature control and motor switches are all mounted on a single panel. Waltz Furnace Co., Dept. ST-9, 1901 Symmes St., Cincinnati, O.

USE REPLY CARD—CIRCLE No. 6

Solder Paste-Flux

. . . fast application, less waste

Eutec-TinWeld is a paint-on solder paste combined with flux that can also be used as a tinning compound in paste form for tinning operations. It consists of a lead-tin-solder that is premixed, in paste form, in proper proportions with its specially compounded accom-

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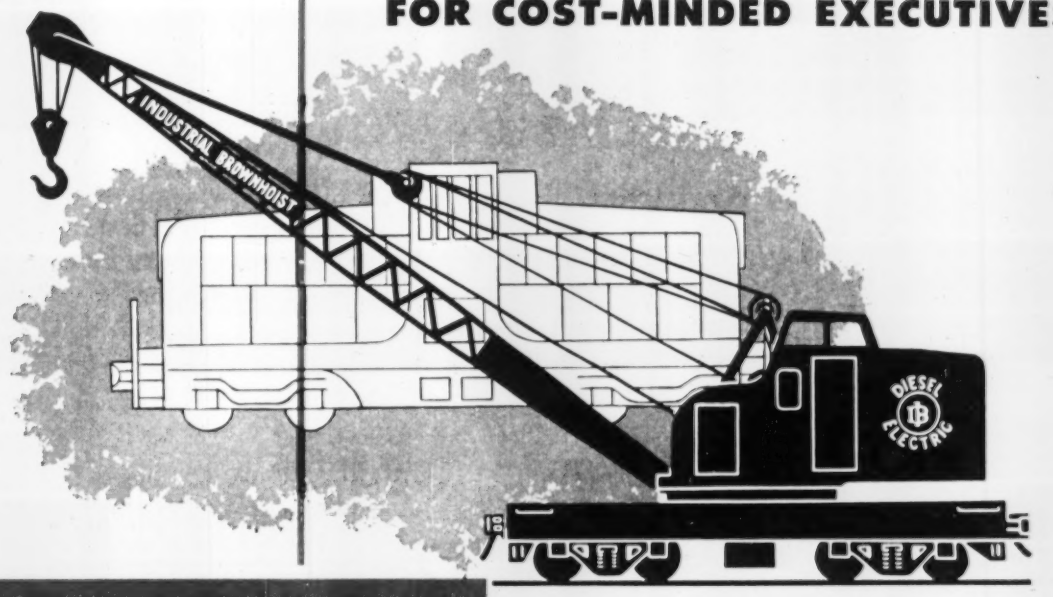

1 (SWITCH ENGINE) + 1 (LOCOMOTIVE-CRANE) = 1 BROWNHOIST DIESEL ELECTRIC LOCOMOTIVE-CRANE

Many railroads, steel mills and manufacturing plants have long been familiar with the powerful, efficient performance of Brownhoist Diesel Electric Locomotive-Cranes in handling bulk materials with magnet, hook or bucket. Brownhoist Cranes also perform equally well as switch engines because they are built with a specially designed travel generator, motor and axle reduction unit — the same equipment used in modern switching locomotives to provide high tractive power and rapid acceleration. These two dependable pieces of equipment in one husky unit mean greater versatility and economy of operation.

Brownhoist Cranes save you man hours, production time and money. The patented Monitor Type Cab and Clear-Vision Boom give the operator unlimited visibility in all directions and help him turn out a greater volume of work in less time. Sound, rugged construction plus a simplified mechanism and easy accessibility to all moving parts help keep maintenance and repair costs low.

Brownhoist Cranes are built in capacities from 25 tons to 80 tons for virtually every heavy duty materials handling operation. For complete information, consult your nearest Brownhoist representative or write us today.

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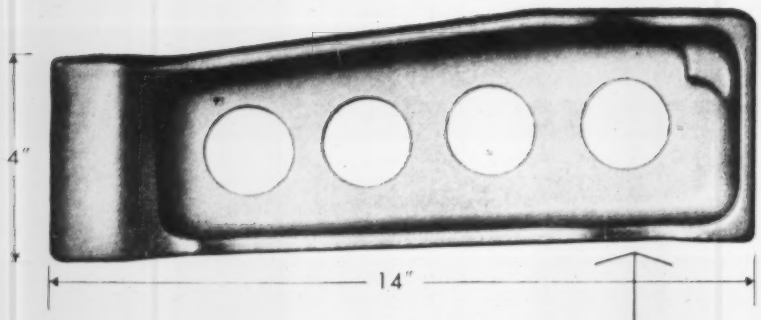

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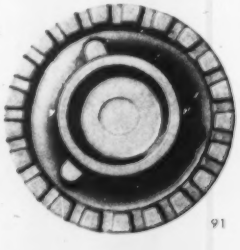


MUELLER BRASS CO.
PORT HURON 19, MICHIGAN

91

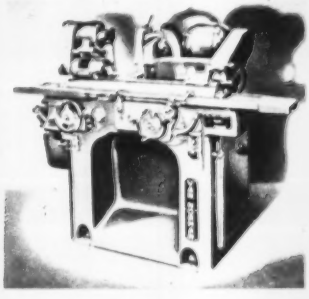
panying flux. Parts to be joined may be dipped into the paste. Tin-Weld can be used with torch, furnace or soldering iron to join all metals except aluminum and magnesium. Eutectic Welding Alloys Corp., Dept. ST, 172nd St. and Northern Blvd., Flushing 58, N. Y.

USE REPLY CARD—CIRCLE No. 7

Cylindrical Grinder

. . . fast work on small parts

Fast precision traverse or plunge cylindrical grinding of small parts on a production basis is possible on this model 418 grinder. The model is particularly adaptable for work on small parts in the toolroom or



job shops usually devoted to small or medium runs.

Recessed base permits operator to work in sitting position. All controls are grouped conveniently within reach from the operating position. Other features include a Pope wheel spindle, wheel slide rapid retraction and automatic starting and stopping of headstock and table traverse. Machine is made with semiautomatic lubrication. Grinding wheel speeds are 1772 and 2067 rpm. Headstock work speeds range from 153 to 940 rpm. Van Norman Co., Dept. ST, Springfield, Mass.

USE REPLY CARD—CIRCLE No. 8

Hard Facing Alloy

. . . resists high temperatures

Resistance to abrasion at high temperatures, ability to withstand attack by molten copper and improved welding characteristics are features claimed for CM-199 hard facing alloy. It can be applied with any good arc welding process. It will weld over itself and more fer-

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America's Best Looking Cap Screw

Made of high carbon steel — AISI C-1038 — to standards for Full Finished hexagon head cap screws — bright finish. Heads machined top and bottom. Hexagon faces clean cut, smooth and true, mirror finish. Tensile strength 95,000-110,000 p.s.i. Carried in stock.

"HI-CARBS"

Heat Treated Black Satin Finish

Made of high carbon steel — AISI C-1038. Furnished with black satin finish due to double heat treatment. Hexagon heads die made; not machined. Points machine turned; flat and chamfered. Tensile strength 130,000-160,000 p.s.i. Carried in stock.

"LO-CARBS"

Made of AISI C-1018 steel — bright finish. For use where heat treatment is not required and where ordinary hexagon heads are satisfactory. Hexagon heads die made to size — not machined. Points machine turned. Tensile strength 75,000-95,000 p.s.i. Carried in stock.

SET SCREWS

Square head and headless — cup point. Case hardened. Expertly made by the pioneers in producing Cup Point Set Screws by the cold upset process. Cup points machine turned. Carried in stock.

FILLISTER CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

FLAT HEAD CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

"SHINYLAND" STUDS

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.

ADJUSTING SCREWS

Valve tappet adjusting screws — Hexagon head style — to blue print specifications — hexagon head hard, polished if specified — threads soft to close tolerance — points machine turned, flat and chamfered.

CONNECTING ROD BOLTS

Made of alloy steel — heat treated — threads rolled or cut — finished to extremely close thread and body tolerances — body ground where specified. Expertly made by the pioneers in producing connecting rod bolts by the cold upset process.

SPRING BOLTS

Case hardened to proper depth and ground to close tolerances. Thread end annealed. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.

FERRY PATENTED ACORN NUTS

For ornamental purposes. Steel insert — steel covered. Finish plain, zinc plated, cadmium plated. Size: 9/16", 3/4", 15/16" across the flats.

Tapped 1/4" to 3/4" inclusive. Cross section of Ferry patented acorn nut, showing how steel hexagon nut fits snugly into shell.

Pioneers and Recognized Specialists, Cold Upset Screw Products since 1907

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rous materials without cracking, checking or porosity. Coast Metals Inc., Dept. ST, Little Ferry, N. J.

USE REPLY CARD—CIRCLE No. 9

Adjustable V-Jaw Tool Holders

. . . capacity upped to ¾-inch

Holding capacity of the adjustable V-jaw Brookfield tool holder is increased by addition of two models. The first, with reduced body dimensions, matches its predecessor's capacity for holding tools from 1/64 to ½-inch. Second model has sufficiently increased body

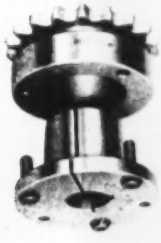
dimensions to hold any diameter tool from 1/16 to ¾-inch.

Shank and V-jaw sections are permanently parallel within 0.0005-inch in 6 inches. Runout is less than 0.0001-inch per inch. Holders can be used for all kinds of turret lathes, drilling, cutting and reaming machines, are also applicable for accurate positioning of second operation work. Brookfield Inc., Dept. ST, 755 Boylston St., Boston 16, Mass.

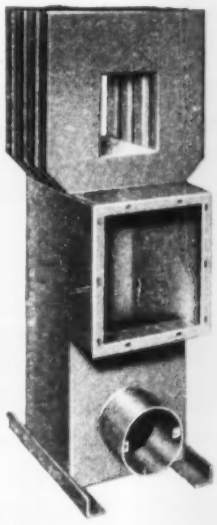
USE REPLY CARD—CIRCLE No. 10

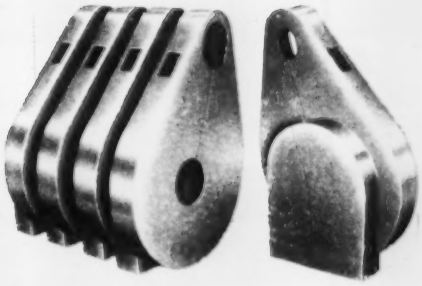
Interchangeable Split Bushing

. . . for use with sprockets



This interchangeable split tapered bushing is built principally for use with sprockets. Its bushing makes it possible to use the same size sprockets on shafts from ½ to 2½ inches diameter in steps of 1/16-inch. Need for reboring stock sprockets to fit particular shafts is eliminated. Bushing grips both the sprocket and the shaft





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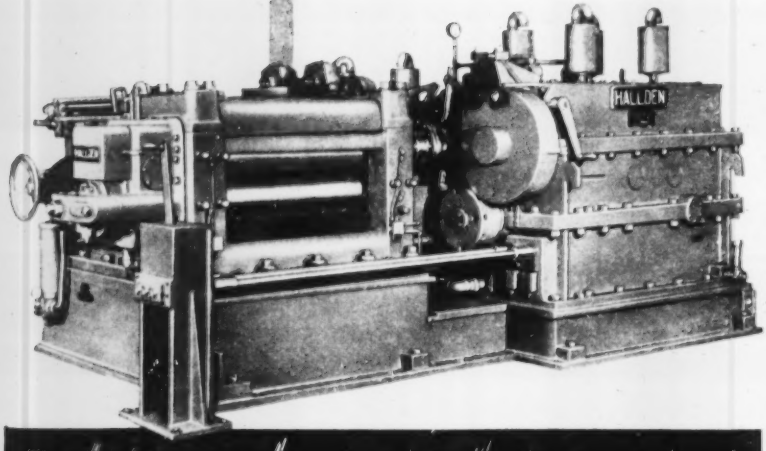

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NEW PRODUCTS and equipment

with the equivalent of a press fit, even on shafts undersized as much as 0.005-inch.

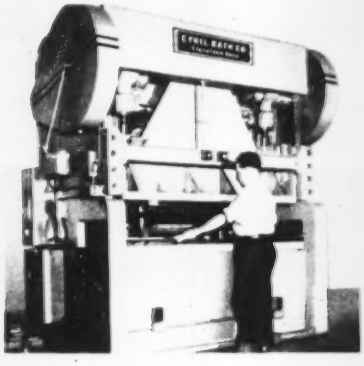
Sprockets are available in sizes from $\frac{1}{2}$ to $1\frac{1}{4}$-inch pitch. Both bushing and sprocket are of machine steel and can be case hardened. Boston Gear Works, Dept. ST, 14 Hayward St., Quincy 71, Mass.

USE REPLY CARD—CIRCLE No. 11

Press-Type Brake

. . . combines two functions

This press-type brake combines principal functions of the press brake and stamping press into one machine, providing greater versatility and speed. Ram and bed are mounted flush with the housing



face, eliminating the practice of reaching under the ram.

Model has a standard 5-inch stroke, 14-inch shut height and 5-inch ram adjustment. Serial operation and end-feeding speeds production by eliminating work transfer from one machine to another and avoiding tie-up of slower, larger draw presses. Machine is rated at 150 tons in each of 5 sizes: 4, 6, 8, 10 and 12-foot bed lengths. Cyril Bath Co., Dept. ST, 6972 Machinery Ave., Cleveland 3, O.

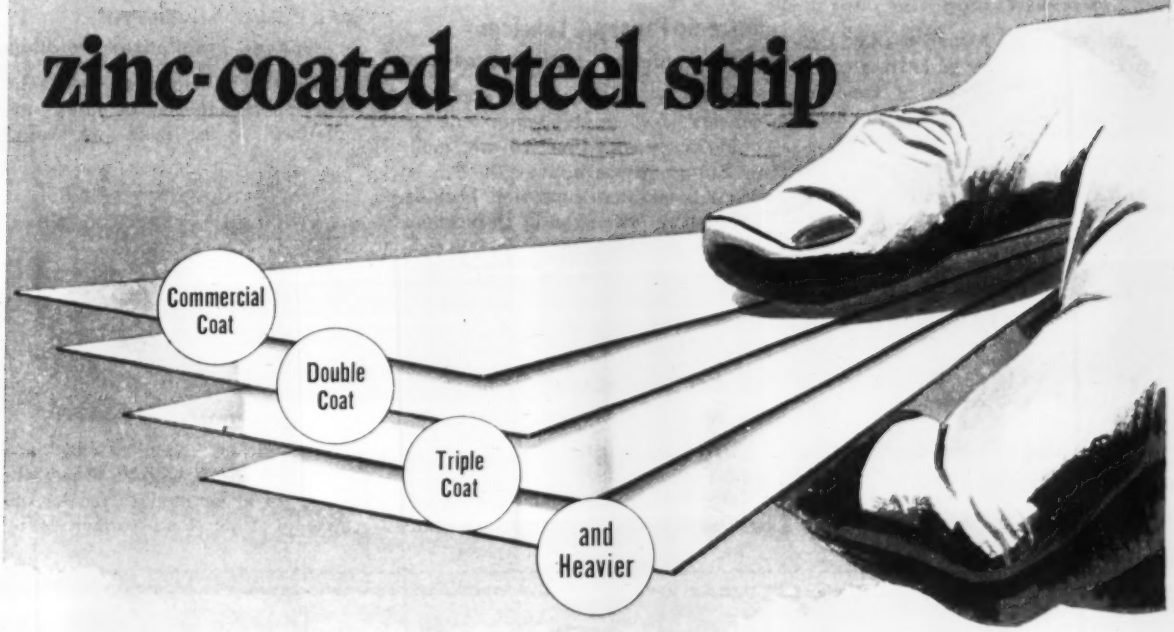
USE REPLY CARD—CIRCLE No. 12

Floor Coating

. . . decorates, protects floors

Colorflex Plus AWA gives a decorative and protective coating for floor surfaces and also resists the alkali content of cement. It is not affected by storage battery acid, lactic acid and cannot be

Now you can get heavier than commercial electro-plated zinc-coated steel strip



When your production standards demand extra protection from corrosion you can get it now with the *double*, *triple*, and even *heavier* electrolytic zinc coated Thomas Strip. This cold-rolled strip steel has a dense, uniformly distributed peel-proof zinc coating that adds substantially to product life and appearance. Coated edges can be furnished in most sizes.

In addition to the extra heavy zinc coatings, Thomas has facilities to handle the heavier gauges of strip in coils or cut lengths—thickness limits up to .125" (full range .005" to .125")—widths ¼" to approximately 22".

Thomas electro-plated zinc strip may be formed, bent, and drawn without affecting the bond or causing flaking. Now it is available in *commercial, double, triple*, and *heavier coatings*. It can be furnished bonderized in strip thicknesses of approximately .050 and lighter to provide extra adherence for paint, lacquer, and enamel. To learn how to put extra quality into your products with precoated Thomas Strip write today.

Cold-rolled strip steel electrolytically precoated with Zinc, Copper, Brass, Nickel, Lead-Alloy, and Chromium in Natural, Planished and Buffed Finishes—Hot Dip Tin and Lead Alloy Coated—Lacquer Coated in Colors—Annealed Spring Steel—Alloy Strip Steel—Uncoated Strip Steel. Carefully produced to your specifications.

Thomas Strip

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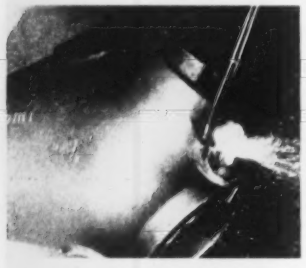
softened by water, mineral oils, grease or gasoline. Flexrock Co., Dept. ST, 3630 Filbert St., Philadelphia 1, Pa.

USE REPLY CARD—CIRCLE No. 13

Flame Washing Torch

. . . removes casting riser pads

Oxyacetylene flame washing torch removes riser pads from castings, effecting savings of time in cleaning operations as compared



with chipping and grinding. Torch design produces a washing, rather than grooving or cutting action. It is available with 20 or 75-degree heads, and with two tip sizes.

A special powder cutting version of the torch has been developed for use on stainless and high-alloy steel castings. National Cylinder Gas Co., 840 N. Michigan Ave., Chicago 11, Ill.

USE REPLY CARD—CIRCLE No. 14

Extreme Pressure Lubricant

. . . protection against corrosion

Molylube Anti-Seize is a highly concentrated molybdenum disulphide compound that will not melt at temperatures above 600 F. It protects against corrosion besides preventing seizing and galling at bearing pressures over 100,000 psi. Bel-Ray Co. Inc., Dept. ST, Green Village Road, Madison, N. J.

USE REPLY CARD—CIRCLE No. 15

Rubber Transmission Belt

. . . for medium duty drives

Drivesall, a rubber transmission belt made with all rayon fabric, is designed for use on medium duty drives for fans, blowers, air compressors, machine tools and similar types of machinery. Its improved strength is due to the nature of the rayon filaments which are formed in continuous lengths. B. F. Goodrich Co., Dept. ST, Akron, O.

USE REPLY CARD—CIRCLE No. 16

Load Pusher Attachment

. . . speeds unpalletized handling

Fork truck load pusher attachment speeds handling of bulky, unpalletized loads such as baled

scrap. Other applications are found in loading highway carriers unable to accommodate trucks because of floor load capacities or

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The main job of the Hansen representative is to supply you with exactly the right couplings for your particular requirements—where quick connection and disconnection will save you time and money.

There are, however, hundreds of plants that regularly make use of his experience to improve the overall performance of their fluid line circuits. Frequently when trouble arises, he can make suggestions which will effectively correct your difficulties.

From years of experience in close contact with many types of hook-ups, both large and small, he can advise you on how to make pipe connections for proper take-off, how much and in what direction to pitch your lines, and where and how to install drains—all designed to give you more efficient, trouble-free performance of your air-operated devices.

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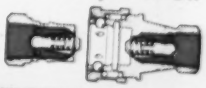

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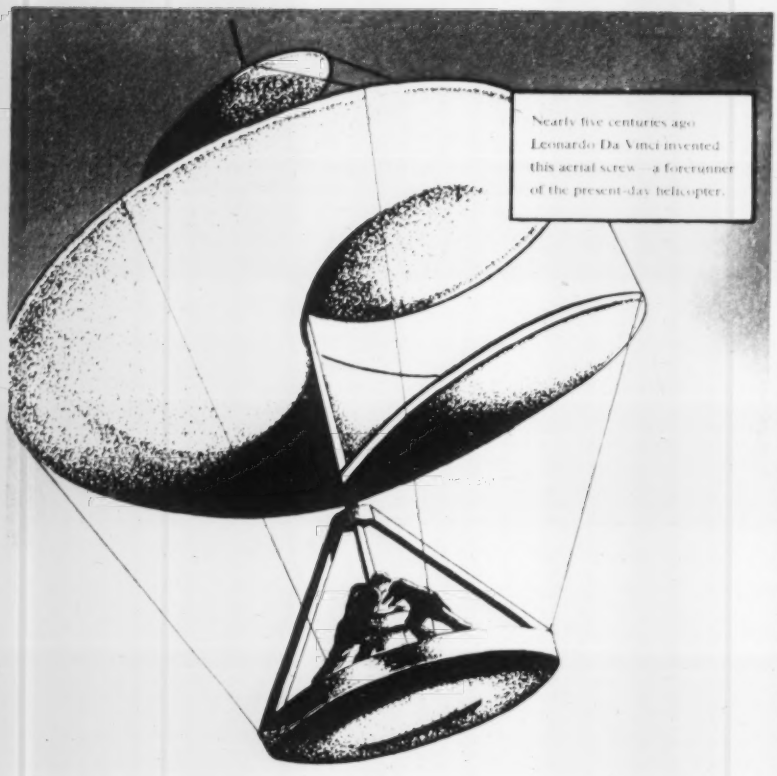

...out of this came Aviation

. . . an industry with imagination

To serve this great industry there are many manufacturers with imagination and vision. Indiana Gear is such a company—a group of able craftsmen equipped with the best of tools and machines—producing the finest in precision parts. At I.G.W. we accept the challenge of this and all other precision industries. We will match their visionary design with creative production.

Indiana Gear fabricated this large steel ring gear for the main transmission of a recent model Sikorsky Helicopter without grinding and without heat treat distortion. Originally, the helical teeth on this gear were ground, but a necessary power increase overloaded the part and it failed.

It was assumed to be impossible to successfully heat treat the unground teeth, but I.G.W. produced the part without distortion and the gear operated successfully.

INDIANA GEAR

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NEW PRODUCTS and equipment

low overhead. No manual handling is involved.

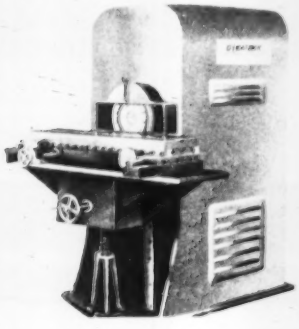
A free-floating jack actuates and equalizes action of two sets of levers that move pusher arms. Positive control over pushing pressure is available from the driver's position. Installation of pusher reduces load capacity only about 10 per cent. Attachment is available on 2000 to 6000-pound trucks. Industrial Truck Division, Baker-Raulang Co., Dept. ST, 1230 W. 80th St., Cleveland 2, O.

USE REPLY CARD—CIRCLE No. 17

Carbide Tool Grinder

. . . no diamond wheels

Machine operates without use of diamond wheel for sharpening single-point tools, face mills and other carbide tools. It produces a superfinish at a reported considerable



increase in grinding speed. The grinder is capable of simultaneous rough and finish grinding; grinds shanks steel and carbide simultaneously.

The unit functions without special preparation of tool. Attachments are available for milling cutter, drill and reamer grinding. Other design features include automatic spindle and wheel balance and vapor spindle lubrication. Dynatomic Corp., Dept. ST, 7 S. Dearborn St., Chicago 3, Ill.

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Screw Tapping Attachment

. . . for standard drill press

An improved lead screw tapping attachment for use in a standard drill press takes the tapping load off the tap and leaves the tap free

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Need just a few lengths of seamless brass tube? We'll be glad to hand them to you "over the counter." Or if your job calls for large quantities of brass or copper sheet, rod, wire or tube, we can speed it on its way to you. That's the kind of service you can get by calling your nearest Chase warehouse.

We can supply you, subject to government controls, with hundreds of items for production, maintenance or repair. That's why it pays to "try Chase first" for anything in brass or copper.

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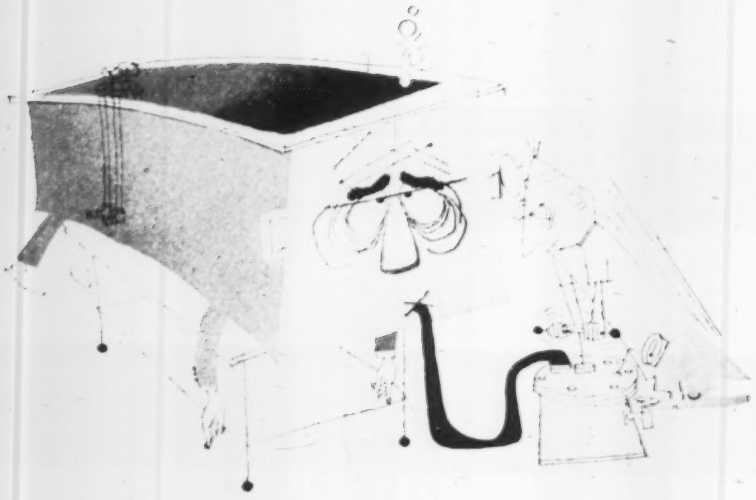

has **coil-itis** ✻ cramped your production flow?

It's a waste of costly time to pump out the solution every time your process heating and cooling tanks get indigestion due to pipe coil troubles. You can save this cost and eliminate production bottlenecks by replacing the pipe coils with Platecoils. Platecoils can be removed and replaced **without dumping the solution**. They simplify maintenance and save hours of downtime. They heat or cool 50% faster and take 50% less space in the tank. As revolutionary as the new wonder drugs, Platecoils cure production troubles involving heat transfer . . . and give profits a shot in the arm.

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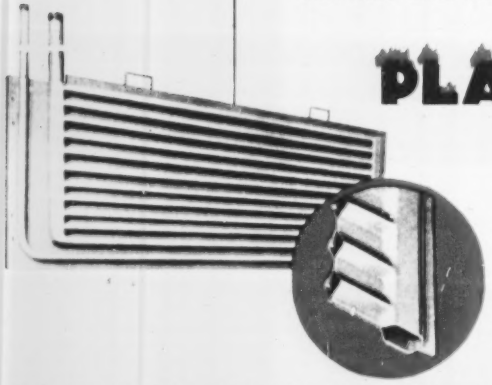
PLATECOILS SAVE 50% IN HEAT TRANSFER COSTS

PLATECOILS TRIPLE PRODUCTION

At Continental Motors Corp., 3 crankcase sections can be cleaned at one time when Platecoils are used while only one crank case can be cleaned with pipecoils in the tank. Ask about other case histories.



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REPLACES PIPE COILS

✻

Coil-itis — Diagnosed as tank heating and cooling problems. Platecoils — the prescription for solving pipe coil problems.

PLATECOIL DIVISION, KOLD-HOLD MANUFACTURING CO., LANSING 4, MICHIGAN

NEW PRODUCTS and equipment

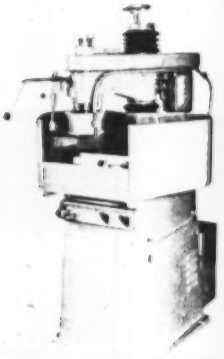
for thread cutting only. A precision rolled thread lead screw and an adjustable split-nut in which it works, carries the driving load. Automatic Methods Inc., Dept. ST, 42 Walnut St., Newark 2, N. J.

USE REPLY CARD—CIRCLE No. 19

Surface Grinding Machine

. . . vertical spindle design

This surface grinder employs a vertical spindle and cup wheel. Work is placed on the table or magnetic chuck and cup wheel passed rapidly over the work by hand for



rough grinding. A hydraulic feed is then engaged for finish grinding.

Vertical adjustment of the spindle is accomplished by a large hand wheel; fine adjustment, by a large-diameter graduated drum reading in 0.0004-inch. Diamond dresser is attached directly to the wheel housing. Machine is equipped with pump and piping for wet grinding. George Scherr Co. Inc., Dept. ST, 200 Lafayette St., New York 12, N. Y.

USE REPLY CARD—CIRCLE No. 20

Phosphoric Acid Cleaner

. . . for ferrous metals

Rust-Sol No. 123 is a phosphoric acid cleaner in concentrate form for ferrous metals. It can be ap-

USE A REPLY CARD

Just circle the corresponding number of any item in this section for more information.

INFORMATION

AVAILABLE FOR THE ASKING

68. Flexible Metal Hose

Flexonics Corp.—RT-6 and RT-8 flexible metal hose is described as the all-purpose tubing and ducting in 4-page illustrated bulletin CMH-115R. Hose is applicable for such varied uses as ducting, refrigeration tubing and automotive exhausting.

69. Compressors

Cooper-Bessemer Corp.—Type M power driven compressors from 300 to 1000-hp are specified along with detailed cutaway and installation illustrations in 4-page bulletin M-65 A. Gage discharge pressures are 80 to 110 psi.

70. Gear Chamferer

Modern Industrial Engineering Co.—Described, and illustrated too, is model BM-2055 Burr-Master for chamfering zerol bevel gears. Where? In bulletin 2055. Operating cycle, work mounting fixtures, construction details and specifications are described.

71. Shears & Structural Shapes

Kling Bros. Engineering Works Company offers two 4-page illustrated bulletins, No. 2345 on double angle shears for flats, bars and angles, and bulletin on "Structural Shapes." Latter covers rolled or formed angles, beams, channels, bars and rail.

72. Data Recording Equipment

Data Engineers, Inc.—"Engineering that Counts" is title of 4-page illustrated brochure that outlines the company's procedure in designing and manufacturing electronic data recording equipment, data conversion equipment and automatic data printing equipment.

73. Aluminum-Steel Bonding

Fairchild Engine & Airplane Corp., Al-Fin Div.—Complete details on a process for the molecular bonding of aluminum and its alloys to steel, iron and other metals are given in 20-page illustrated booklet entitled "Al-Fin." Advantages of light weight, high heat conductivity, bearing properties, oxidation resistance and other properties of aluminum are combined with strength and fatigue resistance of ferrous metals.

74. Industrial X-Ray

Westinghouse Electric Corp.—Seven types of x-ray equipment for industrial applications are described in 4-page illustrated bulletin B-4787. Units covered include, stand, jib crane, high speed radiographic, mobile and wall mounted types.

75. Noise Barriers

Industrial Acoustics Co.—How standardized acoustic panels can be used to silence noise in many applications varying from power plant transformers to all type of machinery is described in this booklet.

76. V-Link Belting

Brammer Corp.—Sizes and prices; advantages of V-link belts compared with endless V belts; Brammer V-link versus other detachable V-link belting; selection table with power correction factors; and assembly, installation and maintenance instructions are covered in data book 205.

77. Foundry Overhead Handling

Forker Corp.—Photographs and layouts of combination Tramrail bridge-crane system in a grey iron foundry are found, along with descriptions and other information, in 4-page brochure 107. System covered has added $100,000 to one company's annual sales volume and it might do the same for you.

78. Steel-Toe Safety Shoes

Safety First Shoe Co.—Features of steel toe safety shoes which afford wearing comfort combined with foot safety are outlined in illustrated catalog. Cutaway drawings show cushioned innersoles of foam latex and other construction details. Both dress safety shoes for supervisory employees and work shoes are shown.

2-2-53

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79. Rotating Parts Tester

Warren Brothers Roads Co., Mfg. Div. Spintesting, the rotation of a part at high speeds to check mechanical perfection and vibration characteristics, is described, and equipment for it illustrated, in 4-page bulletin. Three models are covered, specs given and turbine rotor testing is outlined.

80. High Capacity Switches

Delta-Star Electric Co. H-2P high capacity switches for outdoor service described in bulletin 5207 are available in 2000 to 5000-amp ratings for up to 345 kv service. Drawings, tables and other data aid in selection and application.

81. Clip Fasteners

Prestole Corp. Illustrated 2-page data sheet 190-6-9-A presents standard sizes, application dimensions and other information on latching and nonlatching types of C and J clip fasteners for edge joining of metal panels. They are self-retaining and reusable.

82. Spring Steel

Lapham Hickey Co. 8-page illustrated "Stock List" covers complete line of tempered and annealed spring steel. Prices, weights and sizes are given on blue tempered and polished, black oil tempered, feeler gage, cold rolled annealed, with hot rolled floor annealed spring steel stock.

83. Visual Inspection Units

Arthur S. La Pine & Co. "Visual Inspection Instruments" is title of 8-page illustrated bulletin which contains brief descriptions and prices of line of inspection aids such as stereomicroscopes, illuminating magnifiers, pocket microscopes, magnifiers, comparators and miniature lamps.

84. Power Distribution

Feedrail Corp. 16-page illustrated catalog No. 30 describes and gives specs for 250, 375 and 500-amp heavy duty trolley busway electric power distribution systems. Components are shown, as are applications and mechanical features.

85. The ABC of VCI

Berlin & Jones Co. Industrial Packaging Div. Here are two illustrated bulletins on Volatile Corrosion Inhibitors, used for protecting ferrous metals and aluminum from rust and corrosion without using gooey substances. Technical bulletin VT-1 is a general primer and answers questions on VCI, VPI and VIP, while General Bulletin GB-1 deals specifically with R & J DryVapor Packs-sidajets for protecting steel and aluminum.

86. Optical Level

F. T. Griswold Mfg. Co. Send for 4-page illustrated catalog 30 and you get a description of an optically precise level for measuring flatness, straightness and parallelism. Deviations from true horizontal can be measured to 0.00001in. per inch of length. Use it on plates, rolls, jigs and fixtures.

87. Air-Hardening Tool Steel

Joseph T. Ryerson & Son, Inc. "Dy-Die Air Hardening Tool Steel" is title of 4-page illustrated bulletin which gives chemical analysis, hardening characteristics, wear resisting properties, instructions for heat treatment and typical applications. This general purpose tool steel is suitable for drawing, blanking and forming dies; gages; rolls; punches and similar uses.

88. Axle Load Scales

Howe Scale Co. Weights on each axle of motor trucks and trailers can be checked by line of heavy duty axle load scales described and illustrated in 8-page folder 682. Features that mean more accurate weight control are described and construction details are shown.

EDITORIAL REPRINTS:

89. Specifying Surface Finishes

Just how smooth is smooth? When roughness, smoothness or surface quality of a finish are under discussion, everyone has his own opinion. How Yale & Towne Mfg. Co. standardized surface finishes so that they could ascertain, without difference of opinion, when a desired finish is being produced is told in STEEL reprint "How You Can Specify Surface Finishes."

90. Castable Refractories

R. Russell Fayles, supt. of refractories and fuel, Lukens Steel Co., describes how suspended rammed or castable refractories are being substituted for sprung arch or suspended brick construction on open hearths in STEEL reprint headlined "Eastern Steelmaker Reduces Masonry Man-Hours." Materials possess high-temperature capabilities, adequate strength and good expansion

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plied either by brush on or immersion method and rinsed off with clear water. The cleaner dissolves surface salts, rust, scale, etc. from production pieces, neutralizes and activates the surface with a slight etch and iron phosphate coating that makes a base for paint. Klem Chemicals Inc., Dept. ST, 14401 Lanson, Dearborn, Mich.

USE REPLY CARD—CIRCLE No. 21

Power Rod Parter

. . . no burr or distortion

Improved power rod parter cuts rods and bars rapidly and accurately without burr and distortion, handling work from 1/16 to ⅝-inch. Principal improvement is replace-

ment of the air-operated power unit with a motor-driven flywheel. Flywheel drive operates at 180 strokes per minute, providing six times the cutting speed previously available.

Another advantage is greater convenience, since the unit can be installed without need for air pressure lines, compressors, etc. Gage supplied as standard equipment permits separate operations of gaging, ejecting and cutting to be performed in a single working cycle. O'Neil-Irwin Mfg. Co., Dept. ST, 619 Eighth Ave., Lake City, Minn.

USE REPLY CARD—CIRCLE No. 22

USE A REPLY CARD

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Rafter-high storage of bulky boxed cereals at Kellogg Co., Battle Creek, Michigan.

Put 'em up . . . stop lacking storage capacity and overcrowding floor space . . . start stacking capacity-loads and cash in on otherwise wasted overhead space. Stacking is just one of countless handling jobs you can count on Towmotor to *keep on* doing better. "Man-Hour Thieves" tells the complete cost-cutting story. Write for your copy and name of your nearest Towmotor Representative. Towmotor Corporation, Div. 1602, 1226 E. 152nd St., Cleveland 10, Ohio.

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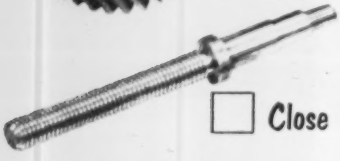

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☐ Accuracy of Section

WHAT ARE YOUR REQUIREMENTS?

Republic Cold Drawn Alloy Bars deliver all 6 . . . plus

UNIFORM MACHINABILITY

Check the properties your steel parts require . . . add the economy of uniform machinability . . . and you have the answer to production and cost problems . . . Republic Cold Drawn Alloy Steel Bars.

High-speed automatics take full advantage of the cost-cutting qualities of Republic Bars. Designers can make full use of the high strength and uniform structure of these cold drawn bars. Production men can get the ideal combination of wearability and strength out of the uniform hardenability and toughness of the alloy steel.

And . . . Republic 3-Dimension Metallurgical Service focuses the experience of our Field, Mill, and Laboratory metallurgists on your production problems for the best answer with Republic Cold Drawn Alloy Steel Bars.

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REPUBLIC STEEL

ALLOY STEEL BARS

The Market Outlook

MOVEMENT toward a balance between supply and demand in the entire steel market continues.

The movement at the moment is slow and evidences of it are spotty, but it is steady.

For some time, some items such as merchant wire products, small bars and merchant pig iron have been in adequate supply. But the demand for other products such as large bars, heavy plates and seamless tubing has exceeded supply. In some geographical areas the demand for a product has been heavier than in other sections. Trade observers have expected balances between supply and demand to arrive product by product and geographical area by geographical area. That pattern is prevailing.

WANTED: CUSTOMERS—Now, some premium price sellers of plates are looking for customers—an indication of an easing in demand. High price sellers are always first to feel a drop in demand.

While freight car builders are renewing pressure for steel plate they are shunning conversion material. They want plates but they don't feel the situation warrants paying the high price of conversion steel.

LESS POPULAR—Foreign steel sheets which have been utilized to supplement insufficient supplies of domestic sheets are of reduced interest to buyers.

Galvanized sheets, which a few months ago were extremely tight, are being ordered with less zeal.

Products in which a balance between supply and demand was near or had already arrived show further signs of easing either supply-wise or price-wise. Light wall welded tubing prices are softening as secondary producers offer increased tonnage. These small mills are not only filling their own orders but are offering their surplus in the open market. This is limited largely to low carbon tubing.

PRICES CUT—On fabricated structural shapes, there's a trend to somewhat lower price quotations as competition sharpens.

One area of evidence of improvement in steel supplies is warehouses. Steady receipt of steel is helping them improve the balance in their stocks, although there's still ground to be gained. Reflecting an easing in pressure for steel, large buyers of steel who normally would depend on mills for supplies but who during the steel shortage relied also on warehouses are drifting away from the latter.

MOVING IN—At the same time the domestic steel supply-demand balance is improving, the offerings of foreign iron and steel are increasing. Growth of steel shipments from Japan has forced European steel almost off the West Coast market in galvanized sheets, black plate and plate.

On the East Coast, Dutch foundry iron is now available for first-quarter delivery at prices not much above the domestic ones.

SCRAP SOFTENS—Disappearance of frenzy from the steel market, along with good weather this winter, is contributing to a softening in demand, and in prices in some cases, for steelmaking scrap. The easing in scrap is most pronounced on the West Coast, where prices dropped below ceilings.

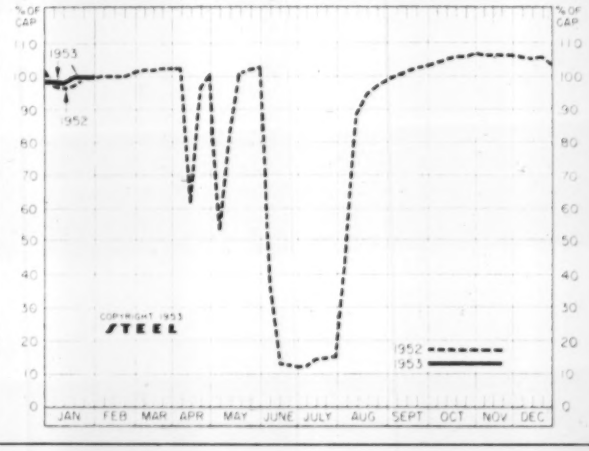
A clue that continued improvement in the balance between supply and demand of steel in the U. S. is expected is the belief of the National Production Authority that government controls on steel production and usage should end Apr. 1.

IN THE MEANTIME—Despite the signs of continued movement toward a balance between supply and demand throughout all steel products, consumers will still have to contend for awhile with shortages of the most-wanted products such as large bars, heavy plates, seamless tubing, wide flange beams, hot-rolled and cold-rolled carbon sheets and nickel-bearing grades of stainless steels.

Helping restore balance between supply and demand is the steel industry's high production rate.

In the week ended Jan. 31, production held at the preceding week's revised rate of 99.5 per cent of capacity, which yielded an all-time weekly record of 2,248,000 tons of steel for ingots and castings.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Jan. 31	Change	Same Week 1952	Same Week 1951
Pittsburgh	105	-0.5*	99	99
Chicago	105.5	0	102.5	100
Mid-Atlantic	95	0	99	101
Youngstown	106	+8	106	106
Wheeling	101	2.5	98	97
Cleveland	97.5	2.5	90.5	76.5
Buffalo	106.5	0	101	101
Birmingham	99.0	10	101	100
New England	95	5	97	92
Cincinnati	95.5	+2	103	101
St. Louis	101	0	86.5	90.5
Detroit	101.5	3*	105	100
Western	102	+1.5	95.5	103
Estimated national rate	99.5†	0*	99.5	101.5

*Change from preceding week's revised rate.
†Estimated rates are based on Jan. 1, 1953, capacities; others, on Jan. 1, 1952, capacities.
Weekly steelmaking capacity is estimated at 2,254,626 net tons in 1953; 2,027,040 tons in 1952; 1,999,038 tons in 1951.

The Metalworking Outlook—p. 63 Production Engineering News—p. 99

Composite Market Averages

FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics	Jan. 27 1953	Jan. 20 1953	Month Ago	January Average
(1947-49=100)	130.6	130.7	130.6	130.7

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended Jan. 27, 1953

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	$3.775	Sheets, C.R. carbon	$5.275
Track spikes	6.650	Sheet, galv.	6.475
Track bolts	9.958	Strip, C.R. carbon	5.100
Tie plates	4.775	Strip, C.R. stainless (lb)	0.325
Joint bars	4.925	Pipe, black, buttweld (100 ft)	7.060
Plates, carbon	4.150	Pipe, galv. buttweld (100 ft)	8.884
Structural shapes	4.209	Boiler tubes (100 ft)	31.663
Bars, tool steel (lb)	1.576	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	6.575	Terne plate (100 lb base box)	7.750
Bars, stainless (lb)	0.149	Wire, carbon, merchant	6.075
Bars, carbon	4.109	Wire, fence, galv.	6.458
Bars, reinforcing	4.050	Nails (100 lb keg)	7.410
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool)	5.920
Sheets, H.R. carbon	4.125	Woven wire fence (20 rod roll)	13.720

FINISHED PRICE INDEX, Weighted

Calculated by STEEL*	Jan. 20 1953	Week Ago	Month Ago	Year Ago	5 Yrs Ago
Index (1935-39 av.=100)	181.31	181.31	181.31	171.92	132.93
Index in cents per lb	4.912	4.912	4.912	4.657	3.601

ARITHMETICAL PRICE COMPOSITES:

Calculated by STEEL*					
Finished Steel, NT	$110.98	$110.98	$110.98	$106.32	$78.50
No. 2 Fdry. Pig Iron, GT	53.01	53.01	53.01	52.24	39.65
Basic Pig Iron, GT	48.66	48.66	48.66	52.16	39.215
Malleable Pig Iron, GT	53.77	53.77	53.77	53.27	40.30
Steelmaking Scrap, GT	43.00	43.00	43.00	43.00	41.05

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composites, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Jan. 20 1953	Week Ago	Month Ago	Year Ago	5 Yrs Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del. Philadelphia	4.502	4.502	4.502	4.223	3.356
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.56	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del. Philadelphia	4.13	4.13	4.13	3.918	2.968
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.15	4.15	4.15	4.15	3.40
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.60
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.71
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.95
Strip, H.R., Pitts.	3.975-4.225	3.975-4.225	3.975-4.225	3.75-4.00	2.80
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.55
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.65
Strip, C.R., Detroit	5.30-6.00	5.30-6.00	5.30-6.00	4.85-5.60	3.71
Wire, Basic, Pitts.	4.475-4.725	4.475-4.725	4.475-4.725	4.15-4.40	3.275
Nails, Wire, Pittsburgh	6.35	6.35	6.35	6.00-6.20	4.20
Tin plate box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$6.70
SEMIFINISHED					
Billets, forging, Pitts. (NT)	$70.50	$70.50	$70.50	$66.00	$56.50
Wire rods, ⅜", Pitts.	4.425	4.425	4.425	4.10-.50	3.175
PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.50	$55.50	$55.50	$53.00	$40.00
Basic, Valley	54.50	54.50	54.50	52.00	39.00
Basic, del. Phila.	59.25	59.25	59.25	56.81	42.004
No. 2 Fdry., Pitts.	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry., Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry., Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry., del. Phila.	59.75	59.75	59.75	57.11	42.504
No. 2 Fdry., Birm.	51.38	51.38	51.38	48.88	37.88
No. 2 Fdry. (Birm.) del. Cin.	58.93	58.93	58.93	55.49	40.74
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	55.00
Ferromanganese, Etna, Pa.	228.00	228.00	228.00	188.00	151.00*
*F.o.b. cars, Pittsburgh.					
SCRAP, Gross Ton (including broker's commission)					
No. 1 Heavy Melt., Pitts.	$44.00	$44.00	$44.00	$44.00	$40.50
No. 1 Heavy Melt., E. Pa.	41.50	41.50	41.50	42.50	43.50
No. 1 Heavy Melt., Chicago	42.50	42.50	42.50	42.50	39.25
No. 1 Heavy Melt., Valley	44.00	44.00	44.00	44.00	40.25
No. 1 Heavy Melt., Cleve.	43.00	43.00	43.00	43.00	39.75
No. 1 Heavy Melt., Buffalo	43.00	43.00	43.00	45.00	43.50
Rails, Rerolling, Chicago	52.50	52.50	52.50	52.50	60.00
No. 1 Cast, Chicago	43.00	43.00	44.00	49.00	63.50
†F.o.b. shipping point.					
COKE, Net Ton					
Beehive, Furn. Connlsvl.	$14.75	$14.75	$14.75	$14.75	$12.00-13.00
Beehive, Fdry. Connlsvl.	17.00	17.00	17.00	17.50	14.00-15.50
Oven, Fdry., Chicago	24.50	24.50	24.50	23.00	18.00

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$56.50	$57.00	$57.50	$58.00
NewYork, del.		60.78	61.28	
Newark, del.	56.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
AlabamaCity, Ala. R2	50.88	51.38		
Birmingham R2	50.88	51.38		
Birmingham S8		51.38		
Woodward,Ala. W15	50.88	51.38		
Cincinnati, del.		58.93		
Buffalo District				
Buffalo R2	54.50	55.00	55.50	
Buffalo H1	54.50	55.00	55.50	
Tonawanda,N.Y. W12	54.50	55.00	55.50	
No.Tonawanda,N.Y. T9		55.00	55.50	
Boston, del.	65.15	65.65	66.15	
Rochester,N.Y. del.	57.52	58.02	58.52	
Syracuse,N.Y. del.	58.62	59.12	59.62	
Chicago District				
Chicago I-6	54.50	55.00	55.00	55.50
Gary,Ind. U5	54.50	....	55.00	
IndianaHarbor,Ind. I-2	54.50	....	55.00	
So.Chicago,Ill. W14	54.50	55.00	55.00	
So.Chicago,Ill. Y1	54.50	55.00	55.00	
So.Chicago,Ill. U5	54.50	....	55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon,Mich., del.		61.30	61.30	
Cleveland District				
Cleveland A7	54.50	55.00	55.00	55.50
Cleveland R2	54.50	55.00	55.00	
Akron,O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain,O. N3	54.50	....	....	55.50
Duluth I-3			55.00	
Erie,Pa. I-3	54.50	55.00	55.00	55.50
Everett,Mass. E1		59.50	60.00	
Fontana,Calif. K1	60.50	61.00		
GraniteCity,Ill. G4	56.40	56.90	57.40	
St.Louis, del. (inc. tax)	57.15	57.65	58.15	
Ironton,Utah C11	54.50	55.00	....	
Geneva,Utah C11	54.50	55.00	....	
LoneStar,Tex. L6	50.50	*51.00	51.00	
Minnequa,Colo. C10	56.50	57.50	57.50	
Rockwood,Tenn. T3		....	58.50	
Pittsburgh District				
Neville Island,Pa. P6		55.00	55.00	55.50
Pitts., N.&S. sides, Ambridge Aliquippa, del.		56.37	56.37	56.87
McKeesRocks, del.		56.04	56.04	56.54
Lawrenceville, Homestead, Wilmerding, Monaca, del.		56.66	56.66	57.16
Verona, Trafford, del.		57.19	57.19	57.69
Brackenridge, del.		57.45	57.45	57.95
Bessemer,Pa. U5	54.50	....	55.00	55.50
Clairton,Rankin,So.Duquesne,Pa. U5	54.50	....	....	
McKeesport,Pa. N3	54.50	....	....	55.50
Monessen,Pa. P7	56.50	....	....	
Sharpsville,Pa. S6		....	55.00	55.50
Steelton,Pa. B2	56.50	57.00	57.50	58.00
Swedeland,Pa. A3	58.50	59.00	59.50	60.00
Toledo,O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47	....	
Troy,N.Y. R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard,O. Y1	54.50	55.00	55.00	
Youngstown,Y1	54.50	55.00	55.00	
Youngstown,U5	54.50	....	....	55.50
Mansfield,O., del.	59.15	59.65	59.65	60.15

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson,O. G2, J1	$65.50
Buffalo H1	66.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P.)

NiagaraFalls,N.Y. P15	$61.00
Keokuk,Iowa, Openhearth & Fdry. frt. allowed K2	92.50
Keokuk, OH & Fdry., 12% lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee, Wash., OH & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos, semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6.)

Lyles,Tenn. T3	$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$59.50
Steelton,Pa. B2	62.50
Philadelphia, delivered	66.05
Troy,N.Y. R2	62.50

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, Jan. 29, 1953, cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$81.00
Munhall,Pa. U5 ....54.00
Seattle S24 ....75.00

INGOTS, Alloy (NT)
Detroit R7 ....$57.00
Fontana,Calif. K1 ....83.00
Houston S5 ....65.00
Midland,Pa. C18 ....57.00
Munhall,Pa. U5 ....57.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$59.00
Clairton,Pa. U5 ....59.00
Ensley,Ala. T2 ....59.00
Fairfield,Ala. T2 ....59.00
Fontana,Calif. K1 ....78.00
Gary,Ind. U5 ....59.00
Johnstown,Pa. B2 ....59.00
Lackawanna,N.Y. B2 ....59.00
Munhall,Pa. U5 ....59.00
So.Chicago,Ill. U5 ....59.00
So.Duquesne,Pa. U5 ....59.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$70.50
Buffalo R2 ....70.50
Canton,O. R2 ....70.50
Clairton,Pa. U5 ....70.50
Cleveland R2 ....70.50
Conshohocken,Pa. A3 ....77.50
Detroit R7 ....73.50
Ensley,Ala. T2 ....70.50
Fairfield,Ala. T2 ....70.50
Fontana,Calif. K1 ....89.50
Gary,Ind. U5 ....70.50
Geneva,Utah C11 ....70.50
Houston S5 ....78.50
Johnstown,Pa. B2 ....70.50
Lackawanna,N.Y. B2 ....70.50
LosAngeles B3 ....89.50
Munhall,Pa. U5 ....70.50
Seattle B3 ....89.50
So.Chicago R2,U5,W14 ....70.50
So.Duquesne,Pa. U5 ....70.50
So.SanFrancisco B3 ....89.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$76.00
Buffalo R2 ....76.00
Canton,O. R2 ....76.00
Canton,O. T7 ....78.60
Conshohocken,Pa. A3 ....82.00
Detroit R7 ....79.00
Fontana,Calif. K1 ....96.00
Gary,Ind. U5 ....76.00
Houston S5 ....84.00
Ind.Harbor,Ind. Y1 ....76.00
Johnstown,Pa. B2 ....76.00
Lackawanna,N.Y. B2 ....76.00
LosAngeles B3 ....96.00
Massillon,O. R2 ....76.00
Midland,Pa. C18 ....76.00
Munhall,Pa. U5 ....76.00
So.Chicago R2,U5,W14 ....76.00
So.Duquesne,Pa. U5 ....76.00
Struthers,O. Y1 ....76.00
Warren,O. C17 ....76.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ....$87.50
Canton,O. R2 ....87.50
Cleveland R2 ....87.50
Fontana,Calif. K1 ....108.50
Gary,Ind. U5 ....87.50
Massillon,O. R2 ....87.50
So.Chicago,Ill. R2 ....87.50
So.Duquesne,Pa. U5 ....87.50

SHEET BARS (NT)
Fontana,Calif. K1 ....$93.18

SKELP
Aliquippa,Pa. J5 ....$3.65
Munhall,Pa. U5 ....3.50
Warren,O. R2 ....3.50
Youngstown R2, U5 ....3.50

WIRE RODS
Alton,Ill. L1 ....4.70
AlabamaCity,Ala. R2 ....4.325
Buffalo W12 ....4.325
Cleveland A7 ....4.325
Donora,Pa. A7 ....4.325
Fairfield,Ala. T2 ....4.325
Fontana,Calif. K1 ....5.125
Houston S5 ....4.725
Johnstown,Pa. B2 ....4.325
Joliet,Ill. A7 ....4.325
KansasCity,Mo. S5 ....4.665
LosAngeles B3 ....5.125
Minnequa,Colo. C10 ....4.575
Monessen,Pa. P7 ....4.525
No.Tonawanda,N.Y. B11 ....4.325
Pittsburg,Calif. C11 ....4.975
Portsmouth,O. P12 ....4.525
Roebling,N.J. R5 ....4.425
So.Chicago,Ill. R2 ....4.325
SparrowsPoint,Md. B2 ....4.425
Sterling,Ill. (1) N15 ....4.325
Struthers,O. Y1 ....4.325
Torrance,Calif. C11 ....5.125
Worcester,Mass. A7 ....4.625

SHEET STEEL PILING
Ind.Harbor, Ind. I-2 ....4.675
Lackawanna,N.Y. B2 ....4.675
Munhall,Pa. U5 ....4.675
So.Chicago,Ill. U5 ....4.675

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ....3.85
Aliquippa,Pa. J5 ....3.85
Bessemer,Ala. T2 ....3.85
Bethlehem,Pa. B2 ....3.90
Clairton,Pa. U5 ....3.85
Fairfield,Ala. T2 ....3.85
Fontana,Calif. K1 ....4.50
Gary,Ind. U5 ....3.85
Geneva,Utah C11 ....3.85
Houston S5 ....4.25
Ind.Harbor,Ind. I-2 ....3.85
Johnstown,Pa. B2 ....3.90
KansasCity,Mo. S5 ....4.45
Lackawanna,N.Y. B2 ....3.90
LosAngeles B3 ....4.45
Minnequa,Colo. C10 ....4.30
Munhall,Pa. U5 ....3.85
Niles,Calif.(22) P1 ....4.56
Phoenixville,Pa. P4 ....6.10
Seattle B3 ....4.50
So.Chicago,Ill. U5,W14 ....3.85
So.SanFrancisco B3 ....4.10
Torrance,Calif. C11 ....4.45
Weirton,W.Va. W6 ....4.10

Wide Flange
Bethlehem,Pa. B2 ....3.90
Clairton,Pa. U5 ....3.85
Fontana,Calif. K1 ....4.65
Johnstown,Pa. B2 ....3.90
Lackawanna,N.Y. B2 ....3.90
Munhall,Pa. U5 ....3.85
So.Chicago,Ill. U5 ....3.85

Alloy Stand. Shapes
Clairton,Pa. U5 ....4.725
Fontana,Calif. K1 ....5.925
Gary,Ind. U5 ....4.725
Munhall,Pa. U5 ....4.725
So.Chicago,Ill. U5 ....4.725

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ....4.80
Bessemer,Ala. T2 ....4.80
Bethlehem,Pa. B2 ....4.80
Clairton,Pa. U5 ....4.80
Fairfield,Ala. T2 ....4.80
Fontana,Calif. K1 ....6.40
Gary,Ind. U5 ....4.80
Geneva,Utah C11 ....4.80
Ind.Harbor,Ind. I-2 ....4.80
Ind.Harbor,Ind. Y1 ....6.30
Johnstown,Pa. B2 ....4.80
Lackawanna,N.Y. B2 ....4.80
LosAngeles B3 ....6.35
Munhall,Pa. U5 ....4.80
Seattle B3 ....6.40
So.Chicago,Ill. U5 ....4.80
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 ....6.30

H.S., L.A. Wide Flange
Aliquippa,Pa. J5 ....5.60
Bethlehem,Pa. B2 ....5.80
Lackawanna,N.Y. B2 ....5.80
Munhall,Pa. U5 ....5.75
So.Chicago,Ill. U5 ....5.75

BEARING PILES
Munhall,Pa. U5 ....3.85
So.Chicago,Ill. U5 ....3.85

PLATES, High-Strength Low-Alloy
Aliquippa,Pa. J5 ....5.50
Bessemer,Ala. T2 ....5.50
Clairton,Pa. U5 ....5.50
Cleveland J5, R2 ....5.50
Conshohocken,Pa. A3 ....6.20
Ecorse,Mich. G5 ....6.50
Fairfield,Ala. T2 ....5.50
Fontana,Calif.(50) K1 ....6.65
Gary,Ind. U5 ....5.50
Geneva, Utah C11 ....5.50
Ind.Harbor,Ind. I-2 ....5.50
Ind.Harbor,Ind. Y1 ....6.45
Johnstown,Pa. B2 ....5.50
Munhall,Pa. U5 ....5.50
Pittsburgh J5 ....5.50
Seattle B3 ....6.85
Sharon,Pa. S3 ....5.50
So. Chicago,Ill. U5 ....5.50
SparrowsPoint,Md. B2 ....5.50
Warren,O. R2 ....5.50
Youngstown Y1 ....6.45
Youngstown U5 ....5.50

PLATES, Open-Hearth Alloy
Claymont,Del. C22 ....5.35
Coatesville,Pa. L7 ....5.75
Conshohocken,Pa. A3 ....5.50
Fontana,Calif. K1 ....6.20
Gary,Ind. U5 ....5.25
Johnstown,Pa. B2 ....5.25
Munhall,Pa. U5 ....5.25
Sharon,Pa. S3 ....5.50
So.Chicago,Ill. U5 ....5.25
SparrowsPoint,Md. B2 ....5.25

FLOOR PLATES
Cleveland J5 ....4.95
Conshohocken,Pa. A3 ....4.95
Ind.Harbor,Ind. I-2 ....4.95
Munhall,Pa. U5 ....4.95
So.Chicago,Ill. U5 ....4.95

PLATES, Ingot Iron
Ashland,c.l. (15) A10 ....4.15
Cleveland,c.l. R2 ....4.50
Warren,O.,c.l. R2 ....4.50

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ....3.90
Aliquippa,Pa. J5 ....3.90
Ashland,Ky. (15) A10 ....3.90
Bessemer,Ala. T2 ....3.90
Clairton,Pa. U5 ....3.90
Claymont,Del. C22 ....4.35
Cleveland J5, R2 ....3.90
Coatesville,Pa. L7 ....4.35
Conshohocken,Pa. A3 ....4.35
Ecorse,Mich. G5 ....4.45
Fairfield,Ala. T2 ....3.90
Fontana,Calif.(50) K1 ....4.60
Gary,Ind. U5 ....3.90
GraniteCity,Ill. G4 ....4.60
Geneva,Utah C11 ....3.90
Harrisburg,Pa. C5 ....6.50
Houston S5 ....4.30
Ind.Harbor,Ind. I-2, Y1 ....3.90
Johnstown,Pa. B2 ....3.90
Lackawanna,N.Y. B2 ....3.90
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 ....3.90
Pittsburgh J5 ....3.90
Seattle B3 ....4.80
Sharon,Pa. S3 ....4.15
So.Chicago,Ill. U5, W14 ....3.90
SparrowsPoint,Md. B2 ....3.90
Steubenville,O. W10 ....3.90
Warren,O. R2 ....3.90
Weirton,W.Va. W6 ....4.20
Youngstown R2, U5, Y1 ....3.90

PLATES, Carbon A.R.
Fontana,Calif. K1 ....5.20
Geneva,Utah C11 ....5.05

PLATES, Wrought Iron
(Add 4.2% to base and extras)
Economy,Pa. B14 ....8.60

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ....3.95
Aliquippa,Pa. J5 ....3.95
Alton,Ill. L1 ....4.50
Atlanta,Ga. A11 ....4.50
Bessemer,Ala. T2 ....3.95
Buffalo R2 ....3.95
Canton,O. R2 ....3.95
Clairton,Pa. U5 ....3.95
Cleveland R2 ....3.95
Detroit R7 ....4.10
Ecorse,Mich. G5 ....4.30
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 ....3.95
Fontana,Calif. K1 ....4.65
Gary,Ind. U5 ....3.95
Houston S5 ....4.35
Ind.Harbor,Ind. I-2 Y1 ....3.95
Johnstown,Pa. B2 ....3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ....3.95
LosAngeles B3 ....4.65
Milton,Pa. B6 ....4.55
Minnequa,Colo. C10 ....4.40
Niles,Calif. P1 ....4.60
N.Tonawanda,N.Y. B11 ....3.95
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 ....3.95
Seattle B3, N14 ....4.70
So.Chicago R2,U5,W14 ....3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFran.Calif. B3 ....4.40
Sterling,Ill. N15 ....4.55
Struthers,O. Y1 ....3.95
Torrance,Calif. C11 ....4.65
Weirton,W.Va. W6 ....4.10
Youngstown R2, U5 ....3.95

BAR SIZE ANGLES, S. Shapes
Aliquippa,Pa. J5 ....3.95
Atlanta A11 ....4.50
Niles,Calif. P1 ....4.65
SanFrancisco S7 ....5.00

BAR SIZE ANGLES, H.R. CARBON
Bethlehem,Pa. B2 ....4.15

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ....4.675
Buffalo R2 ....4.675
Canton,O. R2 ....4.675
Canton,O. T7 ....4.75
Clairton,Pa. U5 ....4.675
Detroit R7 ....4.85
Ecorse,Mich. G5 ....5.025
Fontana,Calif. K1 ....5.725
Gary,Ind. U5 ....4.675
Houston S5 ....5.075
Ind.Harbor,Ind. I-2,Y1 ....4.675
Johnstown,Pa. B2 ....4.675
KansasCity,Mo. S5 ....5.275
Lackawanna,N.Y. B2 ....4.675
LosAngeles B3 ....5.725
Massillon,O. R2 ....4.675
Midland,Pa. C18 ....4.675
So.Chicago R2,U5,W14 ....4.675
So.Duquesne,Pa. U5 ....4.675
Struthers,O. Y1 ....4.675
Warren,O. C17 ....4.675
Youngstown U5 ....4.675

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 ....4.925
Gary,Ind. U5 ....4.925
Youngstown U5 ....4.925

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 ....5.925
Bessemer,Ala. T2 ....5.925
Bethlehem,Pa. B2 ....5.925
Clairton,Pa. U5 ....5.925
Cleveland R2 ....5.925
Ecorse,Mich. G5 ....6.675
Fairfield,Ala. T2 ....5.925
Fontana,Calif. K1 ....6.975
Gary,Ind. U5 ....5.925
Ind.Harbor,Ind. I-2 ....5.925
IndianaHarbor,Ind. Y1 ....6.425
Johnstown,Pa. B2 ....5.925
Lackawanna,N.Y. B2 ....5.925
LosAngeles B3 ....6.625
Pittsburgh J5 ....5.925
Seattle B3 ....6.675
So.Duquesne,Pa. U5 ....5.925
So.SanFrancisco B3 ....6.675
Struthers,O. Y1 ....6.425
Youngstown U5 ....5.925

BARS, Cold-Finished Carbon
Ambridge,Pa.WIS 4.925
BeaverFalls,Pa. R2 ....4.925
BeaverFalls,Pa. M12 ....4.925
Buffalo R5 ....4.950
Camden,N.J. P13 ....5.375
Carnegie,Pa. C12 ....4.925
Chicago R5 ....4.925
Chicago WI8 ....4.925
Cleveland A7, C20 ....4.925
Detroit P17, R7 ....5.075
Donora,Pa. A7 ....4.925
Elyria,O. WS 4.925
FranklinPark,Ill. N9 ....4.925
Gary,Ind. R2 ....4.925
GreenBay,Wis. F7 ....4.925
Hammond,Ind. I-2, M13 ....4.925
Hartford,Conn. R2 ....5.475
LosAngeles R2 ....6.375
Mansfield,Mass. R5 ....5.475
Massillon,O. R2, R5 ....4.925
Monaca,Pa. S17 ....4.925
Newark,N.J. WI8 ....5.375
Plymouth,Mich. P6 ....5.175
Pittsburgh J5 ....4.925
Putnam,Conn. WI8 ....5.475
Readville,Mass. C14 ....5.475
St. Louis,Mo. M6 ....5.30
So.Chicago,Ill. W14 ....4.925
SpringCity,Pa. K3 ....5.375
Struthers,O. Y1 ....4.925
Waukegan,Ill. A7 ....4.925
Youngstown Y1 ....4.925
Youngstown F3 ....4.925

BARS, Cold-Finished Alloy
Ambridge,Pa. WI8 ....6.00
BeaverFalls,Pa. M12 ....6.00
Bethlehem,Pa. B2 ....6.00
Buffalo R5 ....6.00
Camden,N.J. P13 ....6.40
Canton,O. R2 ....6.00
Canton,O. T7 ....6.00
Carnegie,Pa. C12 ....6.00
Chicago R5 ....6.00
Chicago WI8 ....6.00
Cleveland A7 ....6.00
Cleveland C20 ....6.00
Detroit P17, R7 ....6.15
Donora,Pa. A7 ....6.05
Elyria,O. WS 6.00
Gary,Ind. R2 ....6.00
Hammond,Ind. I-2, M13 ....6.00
Hartford,Conn. R2 ....6.45
Lackawanna,N.Y. B2 ....6.00
Mansfield,Mass. R5 ....6.45
Massillon,O. R2, R5 ....6.00
Midland,Pa. C18 ....6.00
Monaca,Pa. S17 ....6.00
Newark,N.J. WI8 ....6.25
Plymouth,Mich. P6 ....6.20
So.Chicago,Ill. R2, W14 ....6.00
SpringCity,Pa. K3 ....6.20
Struthers,O. Y1 ....6.00
Warren,O. C17 ....6.00
Waukegan,Ill. A7 ....6.05
Worcester,Mass. A7 ....6.30
Youngstown Y1 ....6.00
Youngstown F3 ....6.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ....3.95
Atlanta A11 ....4.50
Buffalo R2 ....3.95
Cleveland R2 ....3.95
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 ....3.95
Fontana,Calif. K1 ....4.65
Gary,Ind. U5 ....3.95
Houston S5 ....4.35
Ind.Harbor,Ind. I-2, Y1 ....3.95
Johnstown,Pa. B2 ....3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ....3.95
LosAngeles B3 ....4.65
Milton,Pa. B6 ....4.55
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 ....4.65
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 ....3.95
SandSprings,Okla. S6 ....4.55
Seattle B3, N14 ....4.70
So.Chicago,Ill. R2 ....3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFrancisco B3 ....4.70
SparrowsPoint,Md. B2 ....3.95
Sterling,Ill.(1) N15 ....4.70
Struthers,O. Y1 ....3.95
Torrance,Calif. C11 ....4.65
Youngstown R2, U5 ....3.95

BARS, Reinforcing (Fabricated, to consumers)
Huntington,W.Va. W7 ....5.50
Johnstown,¼-1" B2 ....5.25
LosAngeles B3 ....5.45
Marion,O. P11 ....5.25
Seattle B3, N14 ....5.80
So.SanFrancisco B3 ....5.45
SparrowsPt.,¼-1" B2 ....5.25
Williamsport,Pa. S19 ....5.35

RAIL STEEL BARS
Chicago Hts.(3 to 6) C2 ....4.75
Chicago Hts.(1 to 1-2) 4.75
Franklin,Pa.(3 to 6) F5 ....4.75
FortWorth,Tex.(26) T4 ....5.10
Huntngt.W.Va.(3) W7 ....4.75
Marion,O.(3) P11 ....4.75
Moline,Ill.(3) R2 ....4.65
Tonawanda(3 to 6) B12 ....5.00
Williamsport(3) S19 ....5.25
Williamsport(4) S19 ....5.35

BARS, Wrought Iron
(Add 4.2% to base and extras)
Economy,Pa.(SR) B14 9.60
Economy,Pa.(DR) B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt) L5 14.50
McK.Rks.(SR) L5 ....9.60
McK.Rks.(DR) L5 ....13.00

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ....3.775
Ashland,Ky.(8) A10 ....3.775
Butler,Pa. A10 ....3.775
Cleveland J5, R2 ....3.775
Conshohocken,Pa. A3 ....4.175
Detroit M1 ....4.40
Ecorse,Mich. G5 ....3.975
Fairfield,Ala. T2 ....3.775
Fontana,Calif. K1 ....4.525
Gary,Ind. U5 ....3.775
Geneva,Utah C11 ....3.875
GraniteCity,Ill. G4 ....4.30
Ind.Harbor,Ind. I-2, Y1 ....3.775
Irvin,Pa. U5 ....3.775
Lackawanna,N.Y. B2 ....3.775
Munhall,Pa. U5 ....3.775
Niles,O. N12 ....5.425
Pittsburg,Calif. C11 ....4.475
Pittsburgh J5 ....3.775
Sharon,Pa. S3 ....4.175
So.Chicago,Ill. W14 ....3.775
SparrowsPoint,Md. B2 ....3.775
Steubenville,O. W10 ....3.775
Torrance,Calif. C11 ....4.475
Warren,O. R2 ....3.775
Weirton,W.Va. W6 ....3.775
WestLeechburg,Pa. A4 ....3.925
Youngstown U5, Y1 ....3.775

SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ....4.925
Dover,O. R1 ....5.825
Mansfield,O. E6 ....5.65
Niles,O. N12 ....5.675
Torrance,Calif. C11 ....5.575

SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy
Cleveland J5, R2 ....5.675
Conshohocken,Pa. A3 ....5.925
Ecorse,Mich. G5 ....6.225
Fairfield,Ala. T2 ....5.675
Fontana,Calif. K1 ....6.225
Gary,Ind. U5 ....5.675
Ind.Harbor,Ind. I-2 ....5.675
Ind.Harbor,Ind. Y1 ....6.175
Irvin,Pa. U5 ....5.675
Lackawanna(25) B2 ....5.675
Munhall,U5 ....5.675
Pittsburgh J5 ....5.675
Sharon,Pa. S3 ....5.675
So.Chicago,Ill. U5 ....5.675
SparrowsPoint(36) B2 ....5.675
Warren,O. R2 ....5.675
Weirton,W.Va. W6 ....6.025
Youngstown U5 ....5.675
Youngstown Y1 ....6.175

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 ....6.925
Ecorse,Mich. G5 ....7.475
Fontana,Calif. K1 ....7.875
Gary,Ind. U5 ....6.925
IndianaHarbor,Ind. Y1 ....7.425
IndianaHarbor,Ind. I-2 ....6.925
Irvin,Pa. U5 ....6.925
Lackawanna(37) B2 ....6.925
Pittsburgh J5 ....6.925
SparrowsPoint(38) B2 ....6.925
Warren,O. R2 ....6.925
Weirton,W.Va. W6 ....7.275
Youngstown Y1 ....7.425

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.575
Cleveland J5, R2	4.575
Ecorse,Mich. G5	4.775
Fairfield,Ala. T2	4.575
Follansbee,W.Va. F4	5.575
Fontana,Calif. K1	5.675
Gary,Ind. U5	4.575
GraniteCity,Ill. G4	5.275
Ind Harbor,Ind. I-2,Y1	4.575
Irvin,Pa. U5	4.575
Lackawanna,N.Y. B2	4.575
Middletown,O. A10	4.575
Pittsburg,Calif. C11	5.525
Pittsburgh J5	4.575
SparrowsPoint,Md. B2	4.575
Steubenville,O. W10	4.575
Warren,O. R2	4.575
Weirton,W.Va. W6	4.575
WestLeechburg,Pa. A4	5.45
Youngstown Y1	4.575

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	5.075
Ashland,Ky.(8) A10	5.075
Canton,O. R2	5.075
Delphos,O. N16	5.675
Dover,O. R1	5.775
Fairfield,Ala. T2	5.075
Gary,Ind. U5	5.075
GraniteCity,Ill. G4	5.50
Ind Harbor,Ind. I-2	5.075
Irvin,Pa. U5	5.075
Kokomo,Ind.(13) C16	5.475
MartinsFerry,O. W10	5.075
Niles,O. N12	6.275
Pittsburg,Calif. C11	5.825
SparrowsPoint,Md. B2	5.075
Steubenville,O. W10	5.075
Torrance,Calif. C11	5.825
Weirton,W.Va. W6	5.075

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.625
SparrowsPoint(39) B2	7.775

SHEETS, Galvannealed Steel

Canton,O. R2	5.625
Irvin,Pa. U5	5.625
Kokomo,Ind.(13) C16	5.625
Niles,O. N12	6.825

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.325
Middletown,O. A10	5.325

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.525
Niles,O. R2 (28)	5.925
Weirton,W.Va. W6	5.775

SHEETS, Well Casing

Fontana,Calif. K1	5.34

BLUED Stock, 29 ga.

Yorkville,O. W10	7.00
Follansbee,W.Va. F4	7.10
Follansbee (23) F4	6.425

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.925
Cleveland R2	4.925
Gary,Ind. U5	4.925
GraniteCity,Ill. G4	5.625
Ind Harbor,Ind. I-2	4.925
Irvin,Pa. U5	4.925
Middletown,O. A10	4.925
Youngstown Y1	4.925

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.35

SHEETS, Culvert No. 16	Cu	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.875		
Canton,O. R2	5.925	6.375	
Fairfield,Ala. T2	5.875	6.125	
Gary,Ind. U5	5.875	6.125	
Ind Harbor I-2	5.875	6.125	
Irvin,Pa. U5	5.875	6.125	
Kokomo,Ind. C16	6.525		
MartinsFy.,O.W10	5.875		
Pittsburg,Cal C11	6.625		
SparrowsPt. B2	5.875		
Torrance,Cal.C11	6.625		

SHEETS, Culvert, No. 16 Pure Iron

Ashland Ky. A10	6.125
Fairfield,Ala. T2	6.125
MartinsFerry,O. W10	6.125

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	4.025
Cleveland R2	4.375
Ind Harbor,Ind. I-2	4.025
Warren,O. R2	4.375

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10	5.075
Cleveland R2	5.175
Middletown,O. A10	5.075
Warren,O. R2	5.175

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.325
Canton,O. R2	5.825

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.575
Middletown,O. A10	5.575

SHEETS, ALUMINIZED

Butler,Pa. A10	8.125

TIN PLATE, American 1.25 Coke (Base Box)	lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.00
Gary,Ind. U5	8.70	8.90
Ind Har. I-2, Y1	8.70	8.90
Irvin,Pa. U5	8.70	8.90
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	
Weirton,W.Va.W6	8.70	8.90
Yorkville,O. W10	8.70	8.90

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40		
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

SHEETS, SILICON, H.R. or C.R. COILS (Cut lengths 1/2c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W10 (cut lengths)			7.85	9.10	9.90
Brackenridge,Pa. A4			8.35	9.60	10.40
GraniteCity,Ill. G4 (cut lengths)			8.50	9.80	
IndianaHarbor,Ind. I-2	7.50	7.85	(34)	(41)	
Mansfield,O. E6 (cut lengths)	7.20	7.35	7.85	9.10	9.90
Niles,O. N12 (cut lengths)	7.95	7.35	7.85		
Vandergrift,Pa. U5			7.85	8.35	9.60 10.40
Warren,O. R2	7.50	7.85	8.35	9.60	10.40
Zanesville,O. A10			7.85	8.35	9.60 10.40

SHEETS, SILICON (22 Ga. Base) COILS (Cut Length 1/2c lower)

Transformer Grade	72	65	58	52
Beechbottom,W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4	10.95			
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren,O. R2	10.95			
Zanesville,O. A10	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)			15.35	15.85
Vandergrift,Pa. U5	13.50	14.35	15.35	15.85

MANUFACTURING TERNES (Commercial Coated)

Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$8.60

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10	5.475
Gary,Ind. U5	5.475
Mansfield,O. E6	6.00
Middletown,O. A10	5.475
Niles,O. N12	6.275
Weirton,W.Va. W6	5.475

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.875

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.75

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.65
Conshohocken,Pa. A3	5.90
Ecorse,Mich. G5	6.30
Fairfield,Ala. T2	5.65
Fontana,Calif. K1	6.55
Gary,Ind. U5	5.65
Ind.Harb.,Ind. I-2	5.65
Ind Harbor,Ind. Y1	6.15
Lackawanna,N.Y. B2	5.70
LosAngeles(25) B3	6.40
Seattle(25) B3	6.65
Sharon,Pa. S3	5.65
So.SanFrancisco(25) B3	6.40
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.65
Weirton,W.Va. W6	6.10
Youngstown Y1	6.15
Youngstown U5	5.65

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5	7.45
Cleveland A7	7.30
Dover,O. G6	8.00
Ecorse,Mich. G5	8.15
Lackawanna,N.Y. B2	7.90
Sharon,Pa. S3	7.30
SparrowsPoint,Md. B2	7.90
Warren,O. R2	7.30
Weirton,W.Va. W6	7.95
Youngstown Y1	7.80

STRIP, Hot-Rolled Carbon

Ala City,Ala.(27) R2	3.725
Alton,Ill. L1	4.20
Ashland,Ky.(8) A10	3.725
Atlanta A11	4.275
Bessemer,Ala. T2	3.725
Bridgeport,Con.(10)S15	4.225
Buffalo(27) R2	3.725
Butler,Pa. A10	3.725
Carnegie,Pa. S18	4.225
Conshohocken,Pa. A3	4.125
Detroit M1	4.40
Ecorse,Mich. G5	4.025
Fairfield,Ala. T2	3.725
Fontana,Calif. K1	5.175
Gary,Ind. U5	3.725
Houston,Tex. S5	4.125
Ind Harbor,Ind. I-2,Y1	3.725
Johnstown,Pa.(23) B2	3.725
KansasCity,Mo.(9) S5	4.325
Lackawanna,N.Y.(32) B2	3.725
LosAngeles(25) B3	4.475
Milton,Pa. B6	4.35
Minnequa,Colo. C10	4.775
New Britain(10) S15	4.225
N.Tonawanda,N.Y. B11	3.725
Pittsburg,Calif. C11	4.475
Riverdale,Ill. A1	3.725
SanFrancisco S7	5.00
Seattle(25) B3	4.725
Seattle N14	4.75
Sharon,Pa. S3	4.225
So.Chicago,Ill. W14	3.725
So.SanFrancisco(25) B2	4.475
SparrowsPoint,Md. B2	3.725
Sterling,Ill. N15	4.725
Torrance,Calif. C11	4.475
Warren,O. R2	3.725
Weirton,W.Va. W6	3.825
WestLeechburg,Pa. A4	3.975
Youngstown U5, Y1	3.725

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	6.05
Carnegie,Pa. S18	6.45
Fontana,Calif. K1	7.30
Gary,Ind. U5	6.10
Houston,Tex. S5	6.50
KansasCity,Mo. S5	6.70
Midland,Pa. C18	5.85
NewBritn.,Conn.(10) S15	6.05
Sharon,Pa. S3	6.45
Youngstown U5	6.10

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Bridgeprt,Conn.(10) S15	5.80
Butler,Pa. A10	5.10
Cleveland A7, J5	5.10
Dearborn,Mich. D3	6.05
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	5.30
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	6.75
FranklinPark,Ill.(40) T6	5.35
Ind Harbor,Ind. I-2	5.35
Lackawanna,N.Y. B2	5.10
LosAngeles C1	6.85
Mattapan,Mass. T6	5.55
Middletown,O. A10	5.10
NewBritain(10) S15	5.80
NewCastle,Pa. B4	5.80
NewHaven,Conn. D2	5.85
NewHaven,Conn. A7	5.60
Pawtucket,R.I. R3	6.45
Pawtucket,R.I.(21) N8	6.30
Riverdale,Ill.(40) A1	5.35
Rome,N.Y. R6	5.10
Sharon,Pa. S3	5.80
SparrowsPoint,Md. B2	5.10
Trenton,N.J. R5	6.45
Wallingford,Conn. W2	6.30
Warren,O.(40) T5	5.70
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown C8 (40)	5.70
Youngstown Y1	5.10

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.70
Weirton,W.Va. W6	5.10
Youngstown C8	5.70

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	12.15
Carnegie,Pa. S18	12.00
Cleveland A7	11.40
Dover,O. G6	11.50
Fontana,Calif. K1	13.05
Harrison,N.J. C18	12.00
Midland,Pa. C18	12.00
NewBritn.,Conn.(10) S15	12.15
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown, C8	12.00

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.975
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.70

TIGHT COOPERAGE HOOP

Atlanta A11	4.45
Riverdale,Ill. A1	4.30
Sharon,Pa. S3	4.55
Youngstown U5	4.15

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Beren,O. C7		6.80	7.40	8.35	11.65
Bridgeport,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
Bristol,Conn. W1			8.55	10.50	
Carnegie,Pa. S18		7.65	8.25	10.20	12.50
Cleveland A7	5.10	7.30	8.25	10.20	12.50
Dearborn,Mich. D3	6.05	7.90	8.50		
Detroit D2	5.45	7.50	8.10		
Dover,O. G6	5.70	7.65	8.25	10.20	12.50
FranklinPark,Ill. T6	5.45	7.45	8.40	10.35	12.65
Harrison,N.J. C18			8.55	10.50	12.80
Mattapan,Mass. T6	5.95	7.60	8.55	10.50	12.80
NewBritn.,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
NewCastle,Pa. B4	5.80	7.65	8.25	10.20	
NewCastle,Pa. E5	5.80	7.65	8.25	10.20	12.50
NewHaven,Conn. D2	6.70	7.60	8.20		
NewYork W3		7.95	8.55	10.50	12.80
Pawtucket,R.I. N8:					
Cleve.orPitts.Base		7.65	8.25	10.20	12.50
Worcester,Mass.,Base	6.30	7.95	8.55	10.50	12.80
Sharon,Pa. S3	5.80	7.65	8.25	10.20	12.50
Trenton,N.J. R5		7.95	8.55	10.50	12.80
Wallingford Conn. W2	6.30	7.60	8.20	10.15	12.65
Warren,O. T6	6.20	7.65	8.25	10.20	12.50
Weirton,W.Va. W6	5.80	7.65	8.25	10.20	12.50
Worcester,Mass. A7	5.40	7.60	8.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	8.55	10.50	12.80
Youngstown C8		7.65	8.25	10.20	12.50
Spring Steel (Tempered)					
Trenton,N.J. Ro (2%)			10.30	12.50	15.35
Harrison,N.J. C18			10.30	12.50	15.35
NewYork W3			10.30*	12.50*	15.35*
Youngstown C8			10.30	12.50	15.35

* Plus 1.57c per 100 lb.

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boland Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div., H. K. Porter Co.
B14 A. M. Byers Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Carvmont Steel Products Dept., WickWire Spencer Steel Division
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
I-1 Igue Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J2 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

WIRE, Merchant Quality (6 to 8 gage)

	An'ld.	Galv.
AlabamaCity R2	6.075	6.325
Aliquippa J5	6.075	6.525‡
Atlanta A11	6.325	6.675
Bartonville(19)K4	6.075	6.49
Buffalo W12	5.225	—
Cleveland A7	6.075	6.225
CrawfordsvilleMS	6.175	6.50
Donora,Pa. A7	6.075	6.225
Duluth,Minn. A7	6.075	6.225
Fairfield T2	6.075	6.225
Houston,Tex. S5	6.475	6.625
Johnstown B2	6.075	6.45*
Joliet,Ill. A7	6.075	6.225
KansasCity,Mo. S5	6.675	6.825
Kokomo C16	6.175	6.425
LosAngeles B3	7.025	—
Minnequa C10	6.325	6.76*
Monessen P7	6.075	6.45
Palmer W12	5.525	—
Pitts.,Calif. C11	7.025	7.175
Portsmouth O12	6.475	—
Rankin A7	6.075	6.225
So.Chicago R2	6.075	6.325
So.S.Fran. C10	7.025	7.40*
SparrowsPt. B2	6.175	6.55‡
Sterling,Ill.(4) N15	6.075	6.40
Struthers,O. Y1	6.075	6.475
Torrance,Cal. C11	7.025	—
Worcester A7	6.375	6.525

*Based on 14c zinc; ‡14.50c zinc; 17.5c zinc.

WIRE (16 gage) Stone Stone

(Add 4.7% on base and extras)

	Anl'd.	Galv.
Aliquippa J5	10.15	12.15
Bartonville(19)K4	10.25	12.00*
Cleveland A7	10.25	11.55
Crawfordsville MS	10.73	12.51
Fostoria,O. S1	10.40	13.00
Johnstown B2	10.73	12.58‡
Kokomo C16	10.625‡	12.325‡
Minnequa C10	10.40	12.425*
Palmer,Mass W12	10.25	12.15
Pitts.,Cal. C11	10.60	11.90
SparrowsPt. B2	10.84	12.68‡
Sterling(3) N15	10.73	12.20
Waukegan A7	10.25	11.55
Worcester A7	—	11.85

*Based on 14c zinc; ‡14.50c zinc. †Includes 4.7% increase.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	5.225
Aliquippa,Pa. J5 (42)	4.85
Atlanta A11	5.475
Alton,Ill. L1	5.45
Bartonville,Ill. K4	5.325
Buffalo W12	5.225
Chicago W13	5.475
Cleveland A7, C20	5.225
Crawfordsville,Ind. MS	5.325
Donora,Pa. A7	5.225
Duluth,Minn. A7	5.225
Fairfield,Ala. T2	5.225
Fostoria,O. (24) S1	5.725
Houston S5	5.625
Johnstown,Pa. B2	5.225
Joliet,Ill. A7	5.225
KansasCity,Mo. S5	5.825
Kokomo,Ind. C16	5.325
LosAngeles B3	6.175
Minnequa,Colo. C10	5.475
Monessen,Pa. P7	5.475
Newark 6-8 ga. I-1	5.88
So.Tonawanda B11	5.225
Palmer,Mass. W12	5.525
Pittsburg,Calif. C11	6.175
Portsmouth,O. P12	5.625
Rankin,Pa. A7	5.225
So.Chicago,Ill. R2	5.225
So.SanFrancisco C10	6.175
SparrowsPoint,Md. B2	5.325
Sterling,Ill. (1) N15	5.225
Struthers,O. Y1	5.225
Torrance,Calif. C11	7.025
Waukegan,Ill. A7	5.225
Worcester,Mass. A7	5.325

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo W12 (43)	6.35
Cleveland A7 (43)	5.85
Crawfordsville,Ind.MS(43)	5.85
Dover,O. O6	6.20
Fostoria,O. S1 (43)	6.00
Kokomo,Ind. C16 (43)	5.70
FranklinPark,Ill. T6(43)	6.20
Massillon,O. R8 (43)	5.85
Monessen,Pa. P16 (43)	6.35
Monessen,Pa. P7 (43)	6.10
Pawtkt.R.I.(12) N8 (43)	6.85
Trenton,N.J. R5 (43)	6.15
Worcester,Mass.A7 (43)	6.15
Worcester,Mass. T6 (43)	6.50
Worcester,Mass.W12(43)	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.90
Monessen,Pa. P16 (43)	8.50
Muncie,Ind. I-7 (43)	8.70
Roebling,N.J. R5 (43)	8.80
SparrowsPt.,Md. B2(43)	8.60
Johnstown,Pa. B2 (43)	8.50

ROPE WIRE

Alton,Ill. L1 (43)	9.15
Bartonville,Ill. K4	8.95
Buffalo W12 (43)	8.55
Fostoria,O. S1 (43)	8.55
Johnstown,Pa. B2 (43)	8.55
Monessen,Pa. P16 (43)	8.50
Monessen,Pa. P7 (43)	8.80
Muncie,Ind. I-7 (43)	8.75
Palmer,Mass. W12 (43)	8.85
Portsmouth,O. P12 (43)	8.55
Roebling,N.J. R5 (43)	8.85
SparrowsPt. B2 (43)	8.65
Struthers,O. Y1 (43)	8.55
Worcester,Mass. T6 (43)	8.85

(A) Plow and Mild Plow, add 0.2c for improved plow.

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 (43)	6.25
Alton,Ill. L1 (43)	6.55
Bartonville,Ill. K4	6.64
Buffalo W12 (43)	6.25
Cleveland A7 (43)	6.25
Donora,Pa. A7 (43)	6.25
Duluth,Minn. A7 (43)	6.25
Fostoria,O. S1 (43)	6.25
Johnstown,Pa. B2 (43)	6.25
Millbury(12) N8 (43)	8.05
Minnequa,Colo. C10(43)	6.50
Monessen,Pa. P7 (43)	6.25
Monessen,Pa. P16 (43)	6.75
Muncie,Ind. I-7 (43)	6.45
Palmer,Mass. W12(43)	6.35
Pittsburg,Calif. C11(43)	7.20
Roebling,N.J. R5 (43)	6.55
Portsmouth,O. P12(43)	6.25
So.Chicago,Ill. R2 (43)	6.25
So.SanFran. C10 (43)	7.20
SparrowsPt.,Md. B2 (43)	6.35
Struthers,O. Y1 (43)	6.25
Trenton,N.J. A7 (43)	6.55
Waukegan,Ill. A7 (43)	6.25
Worcester,A7 T6 (43)	6.55
Worcester,Mass. W12(43)	6.55
Worcester,Mass. J4 (43)	6.75

WIRE, Upholstery Spring

Aliquippa,Pa. J5	6.275
Alton,Ill. L1	6.50
Buffalo W12	6.275
Cleveland A7	6.275
Donora,Pa. A7	6.275
Duluth,Minn. A7	6.275
Johnstown,Pa. B2	6.275
LosAngeles B3	7.225
Minnequa,Colo. C10	6.525
Monessen,Pa. P7	6.275
Monessen,Pa. P16(42)	6.40
NewHaven,Conn. A7	6.525
Palmer,Mass. W12	6.375
Pittsburg,Calif. C11	7.225
Portsmouth,O. P12	6.275
Roebling,N.J. R5	6.375
So.Chicago,Ill. R2	6.275
So.SanFrancisco C10	7.225
SparrowsPoint,Md. B2	6.375
Torrance,Calif. C11	7.225
Trenton,N.J. A7	6.375
Waukegan,Ill. A7	6.275
Worcester,Mass. A7	6.375

WIRE, Fine & Weaving (8 Coils)

Alton,Ill.L1 (43)	9.20
Bartonville,Ill. K4	9.42
Buffalo W12 (43)	8.90
Chicago W13	9.52
Cleveland A7 (43)	8.90
Crawf'sville,Ind. MS(43)	8.90
Fostoria,O. S1 (43)	8.90
Johnstown,Pa. B2 (43)	8.90
Kokomo,Ind. C16 (43)	8.90
Monessen,Pa. P16 (43)	8.90
Muncie,Ind. I-7 (43)	9.10
Palmer,Mass. W12 (43)	9.20
Roebling,N.J. R5 (43)	9.20
Waukegan,Ill. A7 (43)	8.90
Worcstr,Mass. A7,T6(43)	9.20

WIRE, Tire Bead

Bartonville,Ill. K4	11.51
Monessen,Pa. P16 (43)	11.40
Roebling,N.J. R5 (43)	11.55

WOVEN FENCE,9-15½ Ga. Col.

AlabamaCity,Ala. R2	135
Ala.City,Ala.,17-19ga.R2	222
Aliqu'pa,Pa.9-14½ga.J5	139‡
Atlanta A11	140
Bartonville,Ill.(19) K4	137
Crawfordsville,Ind. MS	135
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Houston,Tex. S5	141
Johnstown,Pa. B2	138
Johnstown,17ga.,6" B2	229
Joliet,Ill. A7	133
KansasCity,Mo. S5	145
Kokomo,Ind. C16	140
Minnequa,Colo. C10	146*
Monessen,Pa. P7	138
Pittsburg,Calif. C11	156
Rankin,Pa. A7	133
So.Chicago,Ill. R2	135
Sterling,Ill. (4) N15	137

*Based on 14c zinc; ‡17.5c zinc.

FENCE POSTS Col.

Chicago Hts.,Ill. C2	140
Duluth,Minn. A7	133
Franklin,Pa. F6	146
Huntington,W.Va. W7	148
Johnstown,Pa. B2	148
Marion,O. P11	140
Minnequa,Colo. C10	138
Moline,Ill. R2	136
So.Chicago,Ill. R2	140
Tonawanda,N.Y. B12	148
Williamsport,Pa. S19	15*

WIRE, Barbed Col.

AlabamaCity,Ala. R2	144
Aliquippa,Pa. J5	148‡
Atlanta A11	149
Bartonvill,Ill.(19) K4	146
Crawfordsville,Ind. MS	148
Donora,Pa. A7	142
Duluth,Minn. A7	142
Fairfield,Ala. T2	142
Houston,Tex. S5	150
Johnstown,Pa. B2	147
Joliet,Ill. A7	142
KansasCity,Mo. S5	154
Kokomo,Ind. C16	149
Minnequa,Colo. C10	155*
Monessen,Pa. P7	147
Pittsburg,Calif. C11	162
Rankin,Pa. A7	142
So.Chicago,Ill. R2	144
So.SanFran.,Calif. C10	167*
SparrowsPoint,Md. B2	149
Sterling,Ill.(4) N15	146

Based on 14c zinc; ‡17.5c zinc.

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2	132
Atlanta A11	135
Bartonville,Ill.(19) K4	132
Crawfordsville,Ind. MS	134
Donora,Pa. A7	132
Duluth,Minn. A7	132
Fairfield,Ala. T2	132
Joliet,Ill. A7	132
KansasCity,Mo. S5	144
Kokomo,Ind. C16	134
Minnequa,Colo. C10	137
Pittsburg,Calif. C11	156
So.Chicago,Ill. R2	132
So.SanFran.,Calif. C10	156
SparrowsPoint,Md. B2	134
Sterling,Ill.(4) N15	132

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.85
Lebanon,Pa. (31) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh,(6) P11	9.85

AXLES

Ind.Harbor,Ind. S13	5.65
Johnstown,Pa. B2	5.65

NAILS, Stock

To dealers & mfrs. (7) Col.

AlabamaCity,Ala. R2	127
Aliquippa,Pa. J5	127
Atlanta A11	130
Bartonville,Ill.(19) K4	127
Chicago,Ill. W13	127
Cleveland A6 (44)	125
Crawfordsville,Ind. MS	130
Donora,Pa. A7	127
Duluth,Minn. A7	127
Fairfield,Ala. T2	127
Galveston,Tex. I07	135
Houston,Tex. S5 (44)	126
Johnstown,Pa. B2	127
Joliet,Ill. A7	127
KansasCity,Mo. S5 (44)	130
Kokomo,Ind. C16	129
Minnequa,Colo. C10 (44)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	146
Portsmouth,O. P12	132
Rankin,Pa. A7	127
So.Chicago,Ill. R2	127
SparrowsPt.,Md. B2	126
Aliquippa,Pa. J5	126
Atlanta A11	126
Bartonville,Ill. (19) K4	126
Chicago W13	127
Crawfordsville,Ind. MS	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
Kokomo,Ind. C16	128
Minnequa,Colo. C10 (45)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	143
Portsmouth,O. P12	132
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
SparrowsPt.,Md. B2	128
Sterling,Ill.(4) N15	126
Torrance,Calif. C11	146
Worcester,Mass. A7	132

NAILS, Cut (100 lb keg)

To dealers (33)

Conshohocken,Pa. A3	$2.50
Wheeling,W.Va. W10	7.80

TIE PLATES

Fairfield,Ala. T2	4 75‡
Gary,Ind. U5	4 75‡
Ind.Harbor,Ind. I-2	4 75‡
Lackawanna,N.Y. B2	4 75‡
Minnequa,Colo. C10	$65.00*
Pittsburg,Calif. C11	4 92‡
Seattle B3	4 92‡
Steelton,Pa. B2	4 75‡
Torrance,Calif. C11	4 92‡

Per net ton.

JOINT BARS

Bessemer,Pa. U5	4 92‡
Fairfield,Ala. T2	4 92‡
Ind.Harbor,Ind. I-2	4 92‡
Joliet,Ill. U5	4 92‡
Lackawanna,N.Y. B2	4 92‡
Minnequa,Colo. C10	4 92‡
Steelton,Pa. B2	4 92‡

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2	Y1 6.65
Kansascity,Mo. S5	6.60
Lebanon,Pa. B2	6.65
Minnequa,Colo. C10	6.65
Pittsburgh,Pa.	6.65
Seattle B3	7.15
So.Chicago,Ill. R2	6.65
Struthers,O. Y1	6.65
Youngstown R2	6.65

RAILS	Std. No. 1	Std. No. 2	All No. 2	Std. Tee Rails 60 lb. Under
Bessemer,Pa. U5	3.775	3.675	3.725	4.25
Ensley,Ala. T2	3.775	3.675	—	4.25
Fairfield,Ala. T2	—	—	—	4.25
Gary,Ind. U5	3.775	3.675	3.725	—
Huntington,W.Va. W7	—	—	—	5.25
IndianaHarbor,Ind. I-2	3.775	3.675	3.725	—
Johnstown,Pa. B2	—	—	—	(46)4.25
Lackawanna,N.Y. B2	3.775	3.675	—	4.25
Minnequa,Colo. C10	$75.50*	$23.50*	—	4.75
Steelton,Pa. B2	3.775	3.675	—	—
Williamsport,Pa. S19	—	—	—	5.00

Per net ton.

TOOL STEEL

(Prices subject to 4% increase)

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
661 Hardening	0.350
355 Cr Hot Work	0.540
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1		1.06
18	4	2		1.66-1.68
20	2.5	1.2	12.25	3.625
18	4	2	5	2.400
18	2.6	1	8.75	2.125
18	4	2	9	2.44-2.45
14	4	3		1.602
5	3.2	0.6		1.01

W	Cr	V	Mo	
6	4	1.5	5	0.96-0.965
6	4	2	6	1.160
1.6	4	1	8.5	0.810

Tool steel producers include: A4, A8, B2, B8, C4, C6, C13, C18, I-6, F2, J3, L3, M16, S8, U4, V2 and V3.

FOOTNOTES

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Chicago or Birm. base.
(7) To jobbers, 3 cents lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.5c to 2.5c for 6 & heavier.
(15) 15" and thinner.
(16) 10 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven Conn. base.
(22) Red San Francisco Bay area.
(23) 20ga. 36" wide.
(24) Deduct 0.20c, thicker than 15 Ga.
(25) Bar mill hands.
(26) Reinforcing mill lengths, to fabricators or to consumers, 5.85c.
(27) Bar mill sizes.
(28) Reinforced.
(29) Add $4.00 per ton.
(30) Sheared; add 0.75c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20.
(34) 2.85c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 12 gage & lighter 60" & narrower.
(38) 14 gage & lighter 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035", 0.055" and heavier 0.25c higher.
(41) 9.10c for cut lengths.
(42) Plus 0.25c per 100 lb.
(43) Plus 4.7% on base and extras.
(44) Plus 15c per 100 lb.
(45) Plus 40c per 100 lb.

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
N2 National Supply Co.
N3 National Tube Div.
N4 Nelsen Steel & Wire Co.
N6 NewEng.-HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Northwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
O5 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P3 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P8 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance-Div. EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S6 Sheffield Steel Corp.
S6 Sheffield-Fluttmore Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sou. Sheffield S.&I. Ltd.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works.
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U4 Universal Cyclops Steel
U5 United States Steel Corp.
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West Auto Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet & Tube

Substitutes Plate Burning by SHEARING ...and Saves Time

Photo SW-654

The electric foot switch, which is standard on all Steelweld Shears, is especially helpful when cutting wide plates, because the switch can be moved to wherever most convenient to reach. Ball bearing stanchions, illustrated, facilitate movement of large sheets into the shear.

A STEELWELD Pivoted-Blade Shear has cut production time considerably at the Youngstown, Ohio, plant of United Engineering and Foundry Co. Formerly, they cut plate by burning, but now the Steelweld shears it so fast that the operator can spend much of his time at other work.

When plates are cut by burning, a good deal of work is required to prepare the edges for assembly by welding. When plates are sheared, all such preparation is made unnecessary.

United Engineering's shear has a mild steel shearing capacity of 10' x $\frac{1}{2}$" and is equipped with air-electric control. An air cylinder provides fast, positive operation for clutch and brake. The machine has a cutting speed of 45 strokes per minute.

Steelweld Shears have so many outstanding features to insure accuracy, speed production and make operation easier, that we urge you to get the facts on these modern tools. Ask for a nearby representative to call, without obligation, of course, or write for catalog below.

GET THIS BOOK!

CATALOG No. 2011 gives construction and engineering details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.

7834 East 282nd Street, Wickliffe, Ohio

STEELWELD PIVOTED BLADE SHEARS

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3
List Per Ft	5.5c	11.5c	17c	23c	27.5c	37c	48.5c	5.82	7.62		
Pounds Per Ft.	0.85	1.13	1.68	2.28	2.73	3.68					

	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J6 (a)	32	14	32	18.5	38	29.5	38	29	38	21	38	21	40	21.5	40	21.5
Alton, Ill. F1 (a)	29	10.5	32	14.5	35	18	35	18	36	18	36	20	37	20.5	37	20.5
Benwood, W. Va. W10	32	13.5	35	17.5	38	29.5	38	29	38	20	38	22	40	21.5	40	21.5
Etna, Pa. N2 (a)	32	13.5	35	17.5	38	29.5	38	29	38	20	38	22	40	21.5	40	21.5
Fontana, Calif. K1 (a)	19	0.5	22	4.5	25	7.5	25	7	25	7	26	8.5	27	8	27	8
Ind. Harbor, Ind. Y1 (a)	31	14.5	34	18.5	37	21.5	37	21	38	22	38	22.5	39	21.5	39	21.5
Lorain, O. N3 (a)	32	22.5	35	26.5	38	29.5	38	27.5	38	25	38	28 (a)	40	26.5	40	26.5
Sharon, Pa. M6	32	14.5	35	18.5	38	21.5	38	20.5	38	21.00	38	21.00	40	20.5	40	20.5
Sparrows Pt., Md. B2	30	11.5	33	15.5	36	18.5	36	18	36	19.5	37	20	38	18.5	38	18.5
Youngstown, R2 (a)	32	15.5	35	19.5	38	22.5	38	22	38	23	39	23.5	40	22.5	40	22.5
Youngstown, Y1 (a)	32	15.5	35	19.5	38	22.5	38	22.00	38	23.00	39	23.50	40	22.5	40	22.5
Wheatland, Pa. W9	32	13.5	35	16.5	38	18.5	38	19	38	19.5	39	20	40	20.5	40	20.5

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	2	2½	3	3½	4	5	6
List Per Ft	37c	58.5c	76.5c	92c	$1.09	$1.48	$1.92
Pounds Per Ft	3.68	5.82	7.62	9.20	10.89	14.81	18.78

	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J6 (a)	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Ambridge, Pa. N2	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Lorain, O. N3 (a)	24	12.75	27	12.75	27	12.75	29	14.75	29	14.75	33.75	19.5	33.75	19.5
Youngstown, Y1 (a)	24	7.50	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown, R2 (a)	24	7.5	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛	¼	⅜	½	¾	1
List Per Ft	5.5c	6c	6c	92c	$1.09	
Pounds Per Ft	0.24	0.42	0.57	0.20	10.89	

	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Benwood, W. Va. W10	24.5	0.25	23.25	3.5	14.75	7.75	33	14.25	33	14.25		
Butler, Pa. F6 (a)	30.5	1.25	25	1.75	20	5.5						
Etna, Pa. N2 (a)	30.5	1.25	25	1.75	20	5.5	33	14.25	33	14.25		
Sharon, Pa. M6 (a)	29.5	1.25	23	2.25	18	5.25						
Sharon, Pa. S4 (a)	30.5	1.25	25	1.75	20	5.5						
Sparrows Pt., Md. B2	28.5	0.75	23	3.75	18	7.50						
Youngstown, R2 (a)							33	15.25	33	15.25		
Wheatland, Pa. W9	28.5	0.75	23	3.75	18	7.50						

Galvanized pipe discounts based on zinc price of: (a), Hc; (a), 12.50c; (a), 5c, with discounts adjusted depending on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft., mill, minimum wall thickness, cut lengths 10 to 24 ft., inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	14.19	16.41 17.72	16.20	16.20
1¼	13	16.97	19.50 21.26	16.46	19.19
1½	13	18.22 18.77	22.08 22.82	18.19	21.41
1¾	13	20.35 21.35	24.92 25.19	20.69	24.36
2	13	22.81 23.93	27.94 28.68	23.19	27.28
2¼	13	25.69 26.66	31.38 32.18	25.84	30.42
2½	12	28.40 29.36	34.55 35.58	28.16	33.59
2¾	12	31.28 32.17	37.83 39.19	31.16	36.97
3	12	33.87 34.82	40.69 42.14	33.66	38.86
3½	12	35.78 36.87	42.11 44.63	34.66	40.52

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:

½ in. & smaller diam.	15
⅝ in. & ¾ in.	18.5
⅞ in. and larger	16
Longer than 6 in.	1
All diams.	14
Lag bolts, all diams. 6 in. and shorter over 6 in. long	25 21
Ribbed Necked Carriage Bolts	31
Blank	31
Plow	34
Step, Elevator, Tap and Sleigh Shoe	21
Tire Bolts	21
Boiler & Fitting-Up Bolts	31

NUTS

H.P. & C.P.	Reg. Hvy.
Square	
½ in. & smaller	15
⅝ in. & ¾ in.	12 6.5
⅞ in. & 1 in.	9 1
1⅛ in. & larger	7.5 1
H.P. Hex	
½ in. & smaller	26 22
⅝ in. & ¾ in.	16.5 6.5
⅞ in. & 1 in.	12 2
1⅛ in. & larger	8.5 2
C.P. Hex	
½ in. & smaller	26 22
⅝ in. & ¾ in.	23 17.5
⅞ in. & 1 in.	16.5 12
1⅛ in. & larger	12 6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case of keg quantities)

	Reg.	Hvy.
½ in. & smaller	35	28.5
⅝ in. & ¾ in.	29.5	22
⅞ in. & 1 in.	24	15.5
1⅛ in. & larger	13	8.5
	Light	
½ in. & smaller	35	17.5
⅝ in. to ¾ in.	28.5	
⅞ in. to 1 in.	26	

SQUARE HEAD SET SCREWS

(Packaged, per cent off list)

1 in. diam. x 6 in. and shorter

1 in. and smaller diam. x over 6 in.	38 26

HEADLESS SET SCREWS

(Packaged, per cent off list)

No. 10 and smaller	36
¼ in. diam. & larger	16
N.F. thread, all diams.	10

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	18 & 10
Plated finishes	31 & 10

HEXAGON CAP SCREWS

(1020 steel, packaged, per cent off list)

6 in. or shorter

½ in. & smaller	42
⅝ in. through 1 in.	24
Longer than 6 in. ½ in. & smaller	26
⅝ in. through 1 in.	4

RIVETS

(F.o.b. midwestern plants)

Structural, ½ in. & larger 2.50c

½ in. under ..... 50 off

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plants)

GRAPHITE

Inches Diam.	Length	Cents per lb.
17 to 20	60 to 72	17.50
8 to 16	48 to 60 72	17.50
7	48 to 60	19.50
6	48 to 60	20.50

CARBON

11o		8.05
65 to 84 11o		8.05
72 to 104		8.05
34 to		8.05

METALLURGICAL COKE

Price net ton

BEEHIVE OVENS

Connellsvill fur.	$14.50-15.00
Connellsvill fdy.	16.50-17.50
New River foundry	20.50
Wise county, foundry	15.95
Wise county, furnace	15.20

OVEN FOUNDRY COKE

Kearney, N. J. ovens	$24.00
Everett, Mass., ovens New England, del	26.65
Chicago, ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	25.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	21.65
Cincinnati, del.	26.58
LoneStar, Tex., ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis, del.	26.00
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del.	28.05
Flint, del.	28.23
Pontiac, del.	27.06
Saginaw, del.	28.25

*Or within $1.50 freight zone from works.

COAL, CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	30.00-35.00
Toluol, one deg.	30.00-35.00
Industrial xylol	30.00-35.00

Per ton, bulk, ovens

Sulphate of ammonia	$44.50

Cents per pound, ovens

Phenol, to carlots, non-returnable drums	17.25

FLUORSPAR

Metallurgical grade, f.o.b. shipping point in Ill., Ky. net tons, carloads, effective

CaF content 70% or more	$43
	$40

Imported, net ton, duty paid, metallurgical grade $33-$35

*NOTE—Current prices on steel appeared on page 113, Jan. 26 issue.

STAINLESS STEEL

(Add 4.7% on base price and extras)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	41.00	34.00	31.25
302	41.25	36.75	31.50
303	43.25	40.25	34.00
304	43.25	38.75	33.00
309	56.00	55.00	44.75
316	57.00	50.00	49.25
321	49.25	48.25	37.00
347	53.75	52.25	41.50
410	36.50	30.50	25.75
416	37.00	37.00	26.25
420	44.00	47.00	31.25
430	39.00	31.00	26.25
501	27.50	26.00	14.25
502	28.50	27.00	15.25

Balt., Types 301-347 and 430 sheets except 303 and 309, E2.

Brackenridge, Pa., sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U1.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.

Carnegie, Pa., sheets and strip except Types 301, 416, 501 & 502, S15.

Cleveland, strip A7.

Detroit, strip, M1 quotes 34.00c on Type 301, 36.00c 302, 38.00c 304, 48.00c 316, 52.00c 347, 30.00c 410, 31.00c 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except Types 501 & 502, J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416, U5.

Harrison, N. J., strip and wire C15.

Harrison, N. J., wire, Type 302 33.00c, Type 304 34.50c, Type 316 41.50c, including 4.7% increase on base price.

Massillon, O., all items, R2.

McKeesport, Pa., strip, Type 410, bars & wire, Types 410 through 430 and 31.2c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.25c on 321, 41.25c on 347, F2.

McKeesport, Pa., bars, sheets except Type 416, U5.

Middletown, O., sheets and strip except Types 302, 416, 420, 501 and 502, A10.

Midland, sheets & strip C15.

Munhall, Pa., bars U5.

Muncie, Ind., wire L7 quotes types 302, 304, 430.

Pittsburgh, sheets C15.

Reading, Pa., strip except 31.2c on Type 301 and 36.00c on 309, bars except 41.50c on Type 301 and 61.25c on 309, C4.

Sharon, Pa., strip, except Types 301, 309, 416, 501, 502 and 31.25c on Type 301, S1.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C15.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301, J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309, 316 sheets 62.00c, strip 64.00c, W1.

Watervliet, N. Y., structurals & bars A1 quotes variations on Types 301-347.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip A4 quotes slight variations on Types 301-347.

Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 31.25c on Type 301 S3.

METAL POWDERS

(Per pound, f.o.b. shipping point in 500 lots for minus 100 mesh, except as otherwise noted)

Sponge iron	Cents
98+% Fe, annealed	18.00
Unannealed	14.50
Swedish, c.l., N.Y. c.l., in bags	10.00
Electrolytic iron	
Annealed, 99.5+% Fe	42.50
Unannealed, 99+% Fe	36.50
Unannealed, 99+% Fe, minus 325 mesh	53.50
Powder Flakes	18.00
Carbonyl iron, 97.9-99.8% size 5 to 10 microns	85.00-115.00
Aluminum	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	33.00
Antimony, 500 lb lots	71.00
Brass, 20 ton lots	31.00-34.25
Bronze, 10 ton lots	31.25-60.00
Phosphor Copper, 20 ton lots	50.00
Copper	
Electrolytic	37.25
Reduced	35.25
Lead	7.500
Magnesium	75.00-85.00
Manganese	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	86.00
Nickel-Silver 5 ton lots	46.00
Silicon	38.00
Solder	53.00*
Stainless Steel, 302	83.00
Zinc, 10 ton lots	18.00-31.00
Tungsten	Dollars
Melting grade, 99% up to 200 mesh, 1000 lb and over	5.54
Less than 1000 lb	6.00
Molybdenum, 99.9% minus 200 mesh	3.24
Chromium, electrolytic 99% Cr min.	3.00
	Price cost of metal

Call Solar...

when you need to Watch Your "Temper"

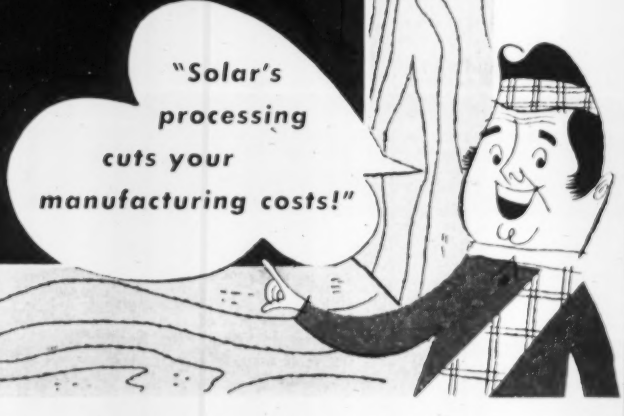
That's the time to let Solar furnish you with any commercial standard or special temper, from stock or by processing. The right temper makes for production increases.

when you want to Get the "Edge"

Just let a Solar warehouse do your Rounded, Beveled, Square or Special edging Eliminate this step in your own manufacturing.

when it's the "Finish" that Counts

Solar warehouses do provide 10 standard finishes on flat rolled and bar products. The correct finish helps improve production.



"for service dependable as the sun"

SOLAR STEEL CORPORATION

SURE SPEC

General Offices: UNION COMMERCE BUILDING, CLEVELAND, OHIO

See your local classified telephone directory for our nearest office address

SALES OFFICES: Chicago • Cincinnati • Cleveland • Detroit • Grand Rapids • Kalamazoo • Milwaukee • Nashville New Haven • Philadelphia • River Rouge, Mich. • Rochester, N.Y. • Toledo • Union, N.J. • Washington, D.C. • Worcester, Mass.

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga. Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††		Carbon	Floor
Baltimore	6.84	7.47	8.37	6.42		6.41	7.42	11.17	6.47	6.47	7.70
Boston	6.51	7.36	8.54	6.55		6.42	7.49	11.18	6.56	6.75	7.98
Buffalo	5.80	6.65	8.41	6.21		5.90	6.95	11.07	6.08	6.30	7.67
Birmingham	5.80	6.65	7.70	5.80		5.80	6.65		5.95	6.10	8.65
Chicago	5.80	6.65	8.00	5.83		5.83	6.80	10.65	5.95	5.95	7.18
Cincinnati	6.15	6.72	8.47	6.14		6.13	7.16	11.07	6.42	6.47	7.69
Cleveland	5.80	6.65	8.14	6.00		5.80	6.90	10.70	6.28	6.12	7.51
Detroit	6.07	6.87	8.64	6.13	7.70	6.12	7.10	10.92	6.42	6.47	7.52
Houston	6.74		8.72	6.89		6.98			6.82	6.78	8.16
Jersey City, N.J.	6.35	7.27	8.47	6.75		6.50	7.78	9.54	6.39	6.60	8.61
Los Angeles	6.60	8.45	9.60	6.75	11.20	6.60	8.60	12.65	6.60	6.65	8.90
Milwaukee	6.07	6.82	8.17	6.00		6.00	7.07	10.82	6.12	6.12	7.35
Moline, Ill.	6.10	7.00	8.35	6.15		6.18	7.16		6.30	6.30	
Newark, N. J.	6.62	7.41	8.63	6.72		6.70	7.71		6.70	6.78	7.18
New York	6.26	7.27	8.42	6.56		6.50	7.53	11.04	6.39	6.66	8.01
Norfolk, Va.	7.60					6.44	8.70		7.25	6.64	7.33
Philadelphia	6.11	7.15	8.30	6.45	8.30	6.42	7.45	10.79	6.17	6.24	7.36
Pittsburgh	5.80	6.65	8.00	5.94		5.83	6.90	10.65	5.95	5.96	7.18
Portland, Oreg.	7.80	9.05	10.00	7.60		7.55	9.65		7.30	7.30	9.25
Richmond, Va.	6.14	6.95	8.68	6.53		6.30	7.65		6.58	6.68	7.80
St. Louis	6.10	6.94	8.30	6.14		6.13	7.20	10.95	6.35	6.35	7.58
St. Paul	6.47	7.31	8.66	6.50		6.49	7.57		6.61	6.61	7.84
San Francisco	6.90	8.20	9.60	6.75		6.65	8.65	12.65	6.50	6.75	8.90
Seattle-Tacoma	7.30	8.24	9.70	7.45		7.13	9.62	13.90§	6.87	7.25	9.11
Spokane, Wash.	7.80	9.10	10.70	7.65		7.10	9.70	13.90	7.60	7.10	9.15
Washington	6.31	7.61	8.90	6.86		6.90	8.03		6.93‡	6.95	8.17

*Prices do not include gage extras; prices include gage and coating extras except Birmingham coating extra excluded; and Los Angeles gage extra excluded). †Includes 25-cent special bar quality extra; ‡as rolled; §as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; 500 to 1999 lb; 1000 to 1999 lb.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural) lower lake ports, old range bessemer $8.15
Old range nonbessemer 7.90
Mesabi bessemer 7.90
Mesabi nonbessemer 7.65
High phosphorus 7.65

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 1, 1950 in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 50-62% concentrates, contract 17.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports, Swedish basic, 60 to 68%

Spot ..... nom.
Long term contract 21.00
North African hematites (spot) 26.00-28.00
Brazilian iron ore, 67.6% (spot) 32.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit $65.00
Domestic scheelite, mines 65.00

Manganese Ore

Manganese, 48% nearby, $1.18-$1.22 per long ton unit, c.i.f. U.S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 56-57¢.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1 ..... $36.00-$42.00
48% 3:1 ..... 44.00-45.00
48% no ratio 40.00-42.00

South African Transvaal

44% no ratio ..... $27.00-$28.00
48% no ratio 34.00-35.00

Brazilian

44% 2.5:1 lump ..... nom.

Domestic

(Basis nearest sellers)

48% 3:1 ..... $26.00

Molybdenum

Sulphide concentrates per lb molybdenum content, mines $1.00

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l., packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%) Contract, carload, lump, bulk, max. 0.03% C 37.60c per lb of contained Cr, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr. 62-66%, C 5-7%) Contract, c.l. S M x D, bulk, 26.25c per lb of contained Cr, C.l., packed 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, S M x D, 18.3c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 25.75c per lb of contained silicon plus 16.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract carload, 1" x D; packed, max 0.50% C grade, $1.12 per lb of contained chromium ton lot $1.14, less ton $1.16. Delivered. Spot add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si; packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe) c.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max. 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 200 to 1999 lb 11.65c, smaller lots 12.15c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max C 3-3.5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.30.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 56c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

BORON ALLOYS

Ferroboron: B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

TUNGSTEN ALLOYS*

Ferrotungsten: (70-80%), 10,000 lb W or more, $4.85 per lb of contained W; 2000 lb W to 10,000 lb W, $4.95; less than 2000 lb W, $5.07, f.o.b. Niagara Falls, N. Y.

*Government ceiling prices, effective May 7, 1951, f.o.b. Niagara Falls, N. Y., basis.

NOTE: Current prices on manganese, titanium and other ferroalloys appeared on page 127 Jan. 19 issue; calcium, zirconium, briquetted alloys and refractories, page 115, Jan. 26.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

Jan. 29	$43.00
Jan. 22	43.00
Dec., 1952	43.00
Jan., 1952	43.00
Jan., 1948	40.75

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Grade 1 / Basing Point	No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grades

2. No. 1 Busheling	Base
3. No. 1 Heavy Melting	—$1.00
4. No. 2 Heavy Melting	— 1.00
5. No. 2 Bundles	— 1.00
6. Machine Shop Turnings	—10.00
7. Mixed Borings and Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate:	
16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base
Foundry, Steel:	
20. 2 feet and under	Base
21. 1 foot and under	+ 2.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00
25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00
31. Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	— 6.00
33. No. 2 Bundles	— 9.00
34. Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purposes.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel and uncut wheelcenters	— 6.00
9. Uncut Frogs, Switches	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or/steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
Bolsters & Side Frames:	
22. Uncut	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3, oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00
31. Fireboxes	— 8.00
32. Boilers	— 6.00
33. No. 2 Sheet Scrap	—13.00
34. Carsides, Doors, Car Ends, cut apart	— 6.00
35. Unassorted Iron & Steel	— 6.00
36. Unprepared scrap, not suitable for hydraulic compression	— 8.00

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.

(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.

(3) For crushing Grade No. 6, $3. For preparing into:

(4) Grade No. 25, $6.

(5) Grade No. 19, $6.

(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.

(7) Grade No. 17 or No. 21, $11.

(8) Grade No. 18, $12.

(9) For hydraulically compressing Grade No. 15, $8.

(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.

(2) For hydraulically compressing Grade No. 13, $6. For preparing into:

(3) Grade No. 16, $4.

(4) Grade No. 17, $5.

(5) Grade No. 18, $7.

(6) Grade No. 21, $4.

(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into Grade No. 7, $9.

(2) For preparing Grade No. 3 into Grade No. 11, $7.

(3) For preparing Grade No. 3 into Grade No. 1, $4.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:	
1. No. 1 (Cupola)	$49.00
2. No. 2 (Charging Box)	47.00
3. No. 3 (Hvy. Breakable)	45.00
4. No. 4 (Burnt Cast)	41.00
5. Cast Iron Brake Shoes	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop broken machinery	52.00

OPEN MARKET

(Delivered prices include broker's commission.)

Birmingham
(Delivered)

Shoveling turnings	$30.00-32.00
Cast iron borings	30.00-32.00
No. 1 cupola cast	44.00-45.00
Stove plate	42.00
Charging box cast	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	41.00
Heavy breakable	36.00
Stove plate	34.00-35.00
Unstripped motor blocks	30.00

Buffalo
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 1 busheling	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Cast iron borings	38.00
Short shoveling turnings	38.00
No. 1 cupola cast	45.50-46.50
No. 1 machinery cast	49.00-50.00

Chicago
(Delivered)

No. 2 heavy melting	42.50
No. 2 bundles	42.50
Machine shop turnings	30.50-32.50
Mixed borings, turnings	34.50-36.50
Shoveling turnings	34.50-36.50
Cast iron borings	34.50-36.50
No. 1 cupola cast	42.00-44.00
Charging box cast	40.00-42.00
Heavy breakable	37.00-39.00
Burnt cast	33.00-35.00
Cast iron brake shoes	40.00-42.00
Stove plate	40.00-42.00
Clean auto cast	44.00-46.00
Unstripped motor blocks	35.00-37.00
Malleable	46.00-48.00
Drop broken machinery	46.00-48.00

Cleveland
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Shoveling turnings	38.00
Cast iron borings	38.00
(F.o.b. shipping point)	
No. 1 cupola	49.00
Charging box cast	47.00
Burnt cast	41.00
Stove plate	46.00
Clean auto cast	52.00
Unstripped motor blocks	41.00
Malleable	55.00
Drop broken machinery	52.00

Detroit
(F.o.b. shipping point)

No. 1 cupola cast	47.00-48.00
Heavy breakable	43.00-44.00
Clean auto cast	49.00-50.00
Unstripped motor blocks	40.00-41.00
Drop broken machinery	50.00-52.00
Charging box cast	44.00-45.00

Los Angeles
(Delivered)

No. 1 heavy melting	34.00
No. 2 heavy melting	29.00
No. 1 bundles	35.00
No. 2 bundles	29.00
No. 1 cupola cast	45.00
Machine shop turnings	14.00

New York
(Brokers' buying prices)

No. 2 heavy melting	35.99
Mixed borings, turnings	29.99
Machine shop turnings	25.99
Cupola cast	40.00‡
Unstripped motor blocks	33.00‡

Philadelphia

No. 1 heavy melting	41.50†
No. 2 heavy melting	41.50†
No. 1 bundles	42.50†
No. 2 bundles	41.50†
No. 1 busheling	42.50†
Mixed borings, turnings	36.50†
Machine shop turnings	32.50†
Short shoveling turnings	36.50†
No. 1 cupola cast	45.00-46.00††
Unstripped motor blocks	40.00††
Heavy breakable	45.00††
Machinery cast	52.00††
Charging box cast	48.00††

† Ceiling price. ‡ Nominal.
§ Shipping point. †† Delivered.

Pittsburgh
(Delivered)

No. 2 heavy melting	44.00†
No. 1 bundles	45.00†
No. 2 bundles	44.00†
Machine shop turnings	35.00†
Shovel turnings	39.00†
No. 1 cupola cast	46.00
Heavy breakable	45.00

† Ceiling price.

San Francisco
(Delivered)

No. 2 heavy melting	27.00
Machine shop turnings	12.00
No. 2 bundles	27.00
No. 1 cupola cast	44.00

Seattle
(Delivered)

No. 1 heavy melting	33.00
(F.o.b. shipping point)	
No. 1 bundles	31.00
No. 1 cupola cast	40.00
Heavy breakable	36.00-38.00
Unstripped motor blocks	31.00

St. Louis
(Delivered)

No. 1 cupola	48.00
Unstripped motor blocks	37.00

Youngstown
(Delivered)

No. 2 heavy melting	43.00
No. 2 bundles	43.00
Machine shop turnings	34.00

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt.	$35.50
No. 1 Bundles	35.50
No. 2 Bundles	35.50
Mechanical Bundles	32.00
Mixed Steel Scrap	31.50
Mixed Borings, Turnings	32.50
Rails, Remelting	35.50
Rails, Rerolling	44.50
Busheling	30.00
Busheling new factory:	
Prep'd	33.50
Unprep'd	31.50
Short Steel Turnings	32.50
Cast Iron Grades†	
No. 1 Machinery Cast	50.00

† F.o.b., shipping point.

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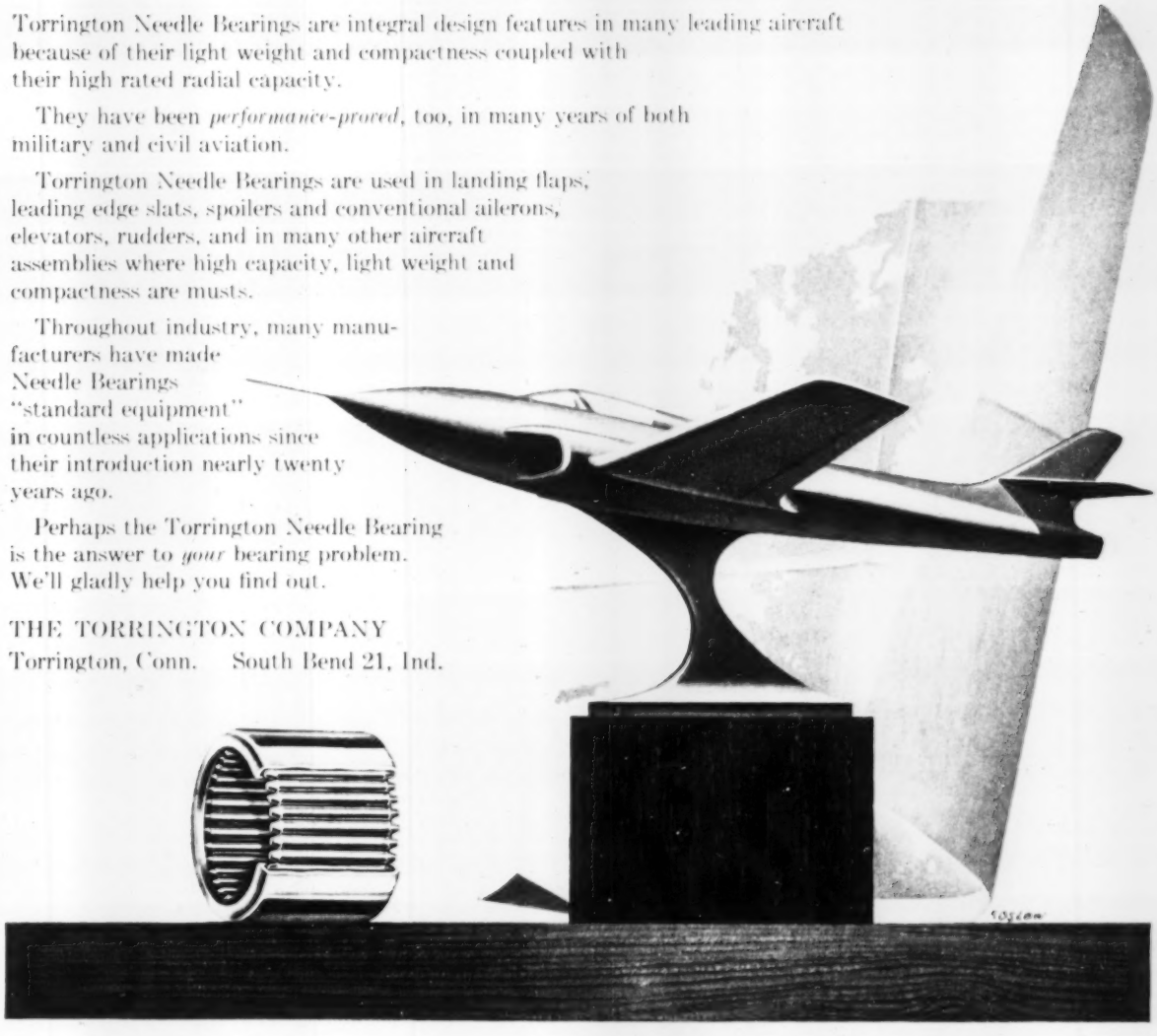

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The Metal Market

Trail Blazer in Action in Manitoba

This modern track-laying equipment is blazing a trail through the wilds of Manitoba, Canada, towards the 57th parallel where Canada is developing what may be one of the world's largest sources of copper-nickel. When completed, the $15-million railroad, being built by Canadian National Railways, will reach from Sherridon to Winnipeg and will carry ore worth an estimated $14 million annually. Much of ore will go to North American defense production and to stockpiles.

The metal market's future trend will take some of its shape from the new administration's attitude, which should unfold further in today's State of the Union message

FUTURE TREND of the metal market will be shaped indirectly by today's State of the Union message to Congress by President Eisenhower.

Impact of the new administration's thinking on the defense program and wage, price and materials control will be felt in new legislation and in broad outlines of policy for government agencies. The specifics of implementing such legislation and policy will reach to every buyer, seller and fabricator of metal.

Direction The new approach to government comes at a time when most metals problems are resolving themselves with, without or in spite of government help. A notable exception: Copper. Supplementary allocations won't be granted in February, according to NPA, and fabricators will feel the pinch.

Rumors rampant that Chile will shove selling prices up 2 to 3.5 cents appear to be false. Here's the situation: U. S. copper companies with mines in Chile sell the metal to the Central Bank of Chile, sole export seller, at a price based on the U. S. market. Today that's 24.5 cents. Sales to U. S. consumers are at about 35.5 cents for Chile, which means 11 cents goes to the Chilean government for each pound sold - a gross of about $75 million on sales to the U. S. last year.

If the U. S. copper price is decontrolled, prices here will go up and Chile will either have to be content with less than an 11-cent markup or will raise its selling price above 35.5 cents. If it follows the latter course, few buyers will be interested and the price will have to come down as metal from other sources hits the market.

Tin Tempest Complete tin decontrol all down the line is due this week. Only the mechanics of an order have held up action this long. Regulations on such products as tin plate and tinned wire must be altered to conform with the basic order.

With use and inventory restrictions off, small users will cause the greatest buying stir. Their activities are expected to further bolster an already-firm market. Pricewise, the metal, which can't exceed RFC's selling price of $1.215, will remain close to that level until immediate needs are satisfied. Supply will be no problem.

On the Floor Zinc has traveled a rocky road the past eight months. Early this year enthusiasm sent the price up ½ cent. Twice since then it has been reduced by that amount. Second cut came last week, making the quotation an even 12 cents, E. St. Louis.

Incoming metal from such irregular sources as Belgium and Germany influenced the drop, but the deciding factor was weakness in prime western. Supply of galvanized steel sheets has been easing, which contributes to market jitters. Special high grade, used by diecasters, is doing well now. It was weakest of all grades last fall. Demand for brass special and high grade leaves a little to be desired.

Around the Market Lead supply may tighten considerably toward the end of the first quarter because of smelter closings and a recent strike in Australia that cost thousands of tons in lost production. Shutdown of St. Joe's Herculaneum Smelter next month will cut off about 4000 tons of lead monthly, one quarter of the company's output.

Mercury continues to waver, now is quoted at $210-$215 per flask.

Aluminum Expansions

Under a DPA program announced last fall, the U. S. aluminum industry would be encouraged to expand sheet, plate and foil capacity to 1,296,000 tons and heat treating capacity to 774,000 tons by 1955. Privately some in the industry doubted that it would be needed, as finishing facilities now installed aren't kept busy all the time. The need for sheet and plate is in widths 18 in. or wider, primarily tapered material for military needs. Much of this equipment for rolling it will be of little use after the defense program. Last week two expansions were announced, one for civilian-military and one for military types of aluminum.

Harvey Machine Co., sixth primary aluminum producer, will build a $20 million rolling mill on the Pacific Coast, probably near its proposed reduction plant at The Dalles, Oreg., to produce sheet strip and circular shapes.

Reynolds Metals Co. will add machinery to its huge McCook, Ill., plant to produce wide tapered sheet and plate up to 35 feet long, under a $7.5 million contract with the Navy.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c; 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 12.00c; brass special 12.25c; intermediate 12.50c; East St. Louis high grade 13.35c, delivered.

Lead: Common 13.80c; chemical 13.90c; corroding 13.50c, St. Louis.

Primary Aluminum: 99% plus ingots 20.50c, pigs 19.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.80c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99.99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.06% max., other impurities 0.1% max.) 33.00c, f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 60.00c; 25-lb pigs, 62.65c; "XX" nickel shot, 63.65c; "F" nickel shot or ingots, for addition to cast iron, 60.00c. Prices include import duty.

Mercury: Open market, spot, New York, $210-$215 per 76-lb flask.

Beryllium Copper: 3.75-4.25% Be, $1.595 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2 dc; special or patented shapes $2.15.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 85.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $175-$185 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 45.52; yellow brass 40.17; commercial bronze, 95% 45.15; 90% 44.38; red brass, 85% 43.10; 80% 42.34; best quality, 41.35; nickel silver, 18% 55.08; phosphor-bronze grade A, 5% 64.71.

Rod: Copper, hot-rolled 41.37; cold-drawn 42.62; yellow brass free cutting, 33.85; commercial bronze 95% 44.84; 90% 44.07; red brass 85% 42.79; 80% 42.03.

Seamless Tubing: Copper 45.56; yellow brass 43.18; commercial bronze, 90% 47.04; red brass, 85% 46.01.

Wire: Yellow brass 40.16; commercial bronze, 95% 45.44; 90% 44.67; red brass, 85% 43.39; 80% 42.63; best quality brass, 41.64.

(Base prices, effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots 32.795; 30,000 lb lots, 32.92; l.c.l., 33.42. Weatherproof, 100,000 lb, 33.60; 30,000 lb, 33.85c; l.c.l., 34.35. Magnet wire del., 15,000 lb or more, 38.75; l.c.l., 39.50.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Aug. 4, 1952 Published prices are subject to 4% increase, effective Jan. 22, 1953.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range — Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	31.6	....	....
0.135-0.096	12-48	32.1	....	....
0.095-0.077	12-48	32.8	30.6	34.9
0.076-0.061	12-48	33.4	30.8	35.1
0.060-0.048	12-48	33.7	31.0	35.4
0.047-0.038	12-48	34.1	31.3	35.7
0.037-0.030	12-48	34.5	31.7	36.3
0.029-0.024	12-48	35.1	32.0	36.8
0.023-0.019	12-36	35.7	32.7	37.5
0.018-0.017	12-36	36.4	33.3	38.4
0.016-0.015	12-36	37.3	34.0	39.5
0.014	12-24	38.3	35.0	40.8
0.013-0.012	12-24	39.3	35.7	41.7
0.011	12-24	40.3	36.8	43.3
0.010-0.0095	12-24	41.4	37.9	44.8
0.009-0.0085	12-24	42.6	39.1	46.6
0.008-0.0075	12-24	44.0	40.3	48.4
0.007	12-18	45.5	41.7	50.6
0.006	12-18	47.0	43.1	55.4

* Lengths 72 to 180 inches. † Maximum diameter, 28 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— R317-T4	—Hexagonal— R-317-T4	17S-T4
	17S-T4		
0.125	54.6	....	....
0.156-0.0188	46.2	....	....
0.219-0.313	43.6	....	....
0.375	42.0	48.3	50.4
0.406	42.0	....	....
0.438	42.0	48.3	50.4
0.469	42.0	....	....
0.500	42.0	48.3	50.4
0.531	42.0	....	....
0.563	42.0	....	47.3
0.594	42.0	....	....
0.625	42.0	45.7	47.3
0.688	42.0	....	47.3
0.750-1.000	41.0	43.1	44.6
1.063	41.0	....	43.1
1.125-1.500	39.4	41.5	43.1
1.563	38.9	....	....
1.625	38.3	....	41.5
1.688-2.000	38.3	....	....

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $19.00 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $19.00 per cwt. Traps and bends: List prices plus 45%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Rolled zinc in coils, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 20.75-21.75c; over 12-in., 20.75-21.75c.

"A" NICKEL

(Base prices f.o.b. mill, effective Dec. 15, 1952) Sheets, cold-rolled, 79.50c. Strip, cold-rolled, 85.50c. Rods and shapes, 75.50c. Plates, 77.50c. Seamless tubes, 108.50c.

MONEL

(Base prices f.o.b. mill, effective Dec. 15, 1952) Sheets, cold-rolled 62.00c. Strip, cold-rolled 66.00c. Rods and shapes, 61.00c. Plates, 62.00c. Seamless tubes, 96.00c. Shot and blocks, 54.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
1953								
Jan. 27-29	24.50	13.80	12.00	121.50	20.50	34.50	60.00	85.25
Jan. 22-26	24.50	13.80	12.50	121.50	20.50	34.50	60.00	85.25
Jan. 16-21	24.50	13.80	12.50	121.50	20.00	34.50	60.00	85.25
Jan. 15	24.50	13.80	12.50	121.50	20.00	34.50	60.00	84.75
Jan. 14	24.50	13.80	12.50	121.50	20.00	34.50	60.00	84.25
Jan. 13	24.50	13.80	13.00	121.50	20.00	34.50	56.50	83.75
Jan. 12	24.50	13.80	13.00	121.50	20.00	34.50	56.50	83.25
Jan. 7-11	24.50	14.30	13.00	121.50	20.00	34.50	56.50	83.25
Jan. 2-6	24.50	14.55	13.00	121.50	20.00	34.50	56.50	83.25
1952								
Dec. Avg.	24.50	13.925	12.50	121.50	20.00	34.50	56.50	83.25
Nov. Avg.	24.50	13.965	12.50	121.50	20.00	34.688	56.50	83.25
Oct. Avg.	24.50	14.226	13.259	121.50	20.00	39.00	56.50	83.25
Jan. 1952 Avg.	24.50	18.80	19.50	109.404	19.00	50.00	56.50	88.00
Jan. 1948 Avg.	21.50	14.825	11.056	94.00	15.00	33.00	33.75	74.625

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 42.18c; oval 41.68c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb 75.50c; 3000 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 300 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, $1.25; 100 lb kegs $1.26, f.o.b. Carteret, N. J., freight allowed on 100 lb or more.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point effective June 28, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	19.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group 1: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material. Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free, 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50. Mixed plant scrap: Copper-free solids, 10.00; dual type, 9.00. Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy 10.75; battery plates 5.50-5.75; linotype and stereotype 12.50; electrotype 10.75; mixed babbitt 13.75.

Zinc: Old zinc 5.00; new die cast scrap 5.00; old die cast scrap 4.00-4.25.

Alloy Steel . . .

New York—Production of alloy steel ingots and castings, including stainless, totaled 9,108,335 net tons in 1952, a decrease of 1,016,252 tons from 1951 output, according to the American Iron & Steel Institute. The drop of 10 per cent in output in 1952 was due to loss of production during the June-July work stoppage last summer. Alloy steel production last year was 9.8 per cent of total steel output, comparing with 9.6 per cent in 1951 and 8.9 in 1950.

Sheets, Strip . . .

Sheet and Strip Prices, Page 169 & 170

Cleveland—No letup in consumer pressure for sheets and strip is in early prospect. The mills are doing their best to meet customers' requirements but the order load, complicated by heavy carryover tonnage from last quarter, is just too heavy. Indications are there will be a heavy carryover from first to second quarter. In fact, most producers expect strong demand will be experienced through remainder of the year. Some mills have not recovered from the loss of tonnage resulting from last summer's steel strike. Larger output made possible by the increase in steelmaking facilities is more than offset by the current surge in demand. Requirements on civilian goods account are exceptionally pressing as compared with a year ago. Manufacturers of appliances, stoves and automobiles are taking in every pound of steel possible.

Boston—First quarter schedules on cold-rolled sheets have been set back. Considerable March volume is included which points to heavier carryover into second quarter than expected. Stainless in the 400 series is being booked heavily for second quarter with producers of this grade already filled into June, notably strip. Carbon sheets are booked into second quarter as far as producers are willing to accept orders. Only easing noted is in galvanized.

New York—Sheet producers are moving cautiously on second quarter commitments. Some have no more hot and cold-rolled tonnage to offer for commercial account, although there may be some spot openings later. On galvanized they are not as tightly booked and consumers should not have too much difficulty placing orders for June, even late May. Stainless sheet promises are not too extended either. This applies not only to the straight chromium grades, but to nickel chromium.

Philadelphia—Sheet sellers are booking for second quarter on a selective basis and in the process are turning away substantial tonnage, especially in hot and cold-rolled carbon sheets, silicon sheets and enameling stock. Even in coated sheets some mills, it appears, are not able to accept all the tonnage offered although pressure for galvanized is not as strong as for the other grades.

Pittsburgh—Tight supply conditions continue for cold-rolled sheet and strip. Non-integrated producers complain not about the tonnage receipts of hot bands, but of the range of sizes which makes it difficult to roll sufficient tonnage of the most sought-after sizes.

Chicago—There is little indication

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now that demand for sheets will diminish soon. Only in galvanized is there any easing but this may evaporate by spring. Pressure for hot and cold-rolled sheets is great and comes from all consuming areas. Recently there has been considerable pickup in demand for electrical sheets.

Birmingham—Demand for cold-rolled sheets continues strong but some easing in pressure for galvanized is noted. Some market observers expect no material change in the cold-rolled supply situation before end of the year. Strip demand is moderate.

Los Angeles—Heavier imports from Japan have forced European steel almost out of the West Coast market on galvanized sheets, black sheets and plate.

Steel Bars . . .

Bar Prices, Page 169

New York—Hot carbon bar producers are running well behind on commitments for bars, one-inch and over. One large producer is behind about six weeks on promises in the larger sizes. In certain cases, April has been blanked out entirely on nondefense business; and now in some cases a substantial portion in May is being blanked out. Several producers, booking on a month-to-month basis, are only opening their books now on commercial tonnage for that month. Stringency continues in hot alloy bars, although mills that have opened for the entire quarter, report they can still accept some tonnage for rolling before end of that period. Also, producers of small hot carbon bars, who have opened books for the entire second quarter, say they have space for additional tonnage.

Boston—Slight easing in bar supply is limited to stock under 1-inch. The improvement is more pronounced with warehouses than with consumers. With military set-asides and warehouse and converter allocations fixed, commercial tonnage openings are narrowed. But converters are getting allotments and some extras which help users of cold-finished 2-inch and under.

Philadelphia—Although there is some easing in supply of small sizes, tonnage in hot-rolled carbon bars 1-inch and larger is scarce. Most mills were unable to accept much new commercial tonnage for April because of carryovers and government regulation set-asides. Where they are booking on a month-to-month basis and are now opening for May they are unable to meet anything like the volume of demand offered.

Pittsburgh—Supply of cold-finished bars is tight with non-integrated producers receiving hot bar tonnage only on directives. Further tightening is reported in alloy bars. Pressure for cold-finished is greatest from the automotive industry.

It is now reported stocks of hot-rolled bar users are improving, although no one yet has a substantial inventory. Hardest pressed are machine tool manufacturers, forging producers and cold-finishers.

Cleveland—Bar mills anticipate no letup in demand pressure on military and defense account for months to come. Stringency in supply, especially in the larger sizes, is expected to be a troublesome factor in procurement on civilian goods account through most of the year. Meanwhile, supplies of small sizes are improving steadily. In connection with the bar shortage, results of the first phase of a 3-pronged study of finished steel capacity by the Defense Production Administration, shows net shipments of hot-rolled bars, including tube rounds $1\frac{1}{2}$ to $9\frac{1}{2}$ inches, in 1950 were 5,845,000 net tons, but due to the capacity expansion since outbreak of the Korean war, maximum possible annual production at conclusion of the expansion program, currently nearing completion, will be 21,538,000 net tons. Maximum production of cold-finished bars $1\frac{1}{2}$ inches and over when the expansion program is completed is placed at 2,307,000 net tons. Cold-finished shipments in 1950 totaled 552,000 tons.

Los Angeles—Cold-drawers are booked through March on carbon bars and through April on specialty and alloy grades.

Plates . . .

Plate Prices, Page 169

Philadelphia—Sheared plate producers look for a strong market throughout the greater part of the year. Some mills that opened books for the entire second quarter are no longer accepting nondefense work for that period. Spot openings may appear later. Mills booking on a month-to-month basis now have opened for May tonnage. Reflecting general strength in plates is the fact while deliveries against commitments are falling well behind in various instances, consumers thus affected are not canceling their orders for the reason they can't do better elsewhere.

Boston—Sheared and universal plate mill schedules are filled through May. Numerous consumers with tickets have not yet placed them for second quarter. Potential for any increase in June tonnage is doubtful. Consumer inventories of heavier and wider plates are down to 30 days in some cases, but those able to utilize narrow and lighter strip mill plates are better off with stocks for 45 to 60 days.

New York—Plate producers, booking on a month-to-month basis, are opening books for May on nondefense tonnage. Space is short of requirements, particularly in the heavier gages of sheared plate. Most mills see little improvement in heavier gages before third quarter.

Pittsburgh—Most open space on books of steel plate producers has been filled. Strong business is expected through third quarter. Only mills with open space are those charging the tonnage premiums.

Chicago—Plate fabricators report a volume of bookings which assures a tight supply situation for plates throughout 1953. It is the heavy and wide product that causes most concern.

Seattle—Shell Oil Co. is adding 296,000-barrel storage capacity to its Harbor Island terminal tank farm, tanks being fabricated by Chicago Bridge & Iron Co. Unconfirmed report is to the effect 6000 tons of plates for a classified project at Hanford, Wash., will be rolled at Geneva and Fontana for Kaiser Engineering Co.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 169

Los Angeles—Military construction in southern California, southern Nevada, and Arizona of $100 million valuation, to get underway in the first and second quarters, will sustain demand for reinforcing steel and structural materials.

Seattle—With mild weather permitting construction activities on a larger than seasonal scale, inquiry for small tonnages of reinforcing bars continues strong. District rolling mills are engaged at capacity.

Structural Shapes . . .

Structural Shape Prices, Page 169

New York—Structural steel contracts in December amounted to 236,264 tons, against revised figures of 144,001 tons in November and 184,331 tons in October, reports the American Institute of Steel Construction. This brought the total for the year to 2,503,521 tons against 2,931,072 in 1951, and 2,370,040, the average for 1947-1950 inclusive.

December shipments were 225,161 tons against 223,662 as revised for November, and 262,730 as revised for October. Total shipments for the year were 2,664,255 tons against 2,702,262 the preceding year.

Backlog as of Dec. 31 was 2,152,714 tons compared with 2,670,202 on Dec. 31, 1951.

New York—Substantial public work, notably highway requirements, is noted. Latest sizable inquiry involves 9455 tons of structurals for the bridge over the Raritan river, Middlesex county, New Jersey, in connection with the Garden State parkway. Commercial work lags, due in part to governmental restrictions.

Boston—Total tonnage of plain material in fabrication shop inventories is substantial, but spot tonnage in sizes for current estimates is out of balance. District shop backlogs average close to three months with delivery a growing factor in placement of contracts. Some shops are filling inventory gaps with foreign steel. Prices on fabricated material cover a wider range, the general trend being toward somewhat lower quotations as competition sharpens.

Philadelphia—Fabricators report difficulty obtaining wide flange shapes, particularly between 6 and 16-inches inclusive. Shipments are running well behind promises. Fabricators are unable to build up inventories to anything like normal, although they have made some headway. There continues a preponderance of public work, notably bridges and other large projects.

Cleveland—Substantial volume of public work in sight in this general area brightens the building steel market outlook for coming months. Numerous school and similar public projects are actively before fabricators. First step toward construction of an $80,000 incinerator was taken last week by the Berea, O., council. Contract is being entered into with Damon Worley & Samuels & Associates for architectural and engineering plans. Another Cleveland suburb, Bedford, will ask for bids

Feb. 13 for the construction of 17 classrooms as part of a high school.

Los Angeles—Valuation of construction in progress in southern California is estimated at $762,833,838 including $99,665,200 of highway and freeway construction, $127,481,000 of Army and Navy construction, and municipal construction of $68 million. Valuation of school construction is $115 million, and hospitals $66 million. Private work totals $287 million.

San Francisco—Golden Gate bridge directors have voted to spend $3,500,000 to strengthen the span. It is estimated 4750 tons of structural steel will be needed.

Seattle—Demand for structural shapes is strong. Heavy placements are expected with the opening of bids this quarter by U.S. Engineers for military installations in Alaska and the Pacific Northwest. Federal agencies reportedly have allocated 2828 tons of shapes for a proposed Tacoma oil refinery.

Wire . . .

Wire Prices, Page 171

Boston—With few exceptions where demand for the finished product is heavy, notably upholstery wire and automotive goods, consumers of carbon wire are not pressing too hard for second quarter. Manufacturers' and cold-heading wire are available for April-May delivery, although no serious difficulty is expected in filling second quarter capacity on most major products.

New York—High carbon wire bookings for second quarter indicate full schedules for the period. Demand for valve spring and other wire by the automotive industry is heavy with second half buying depending on heavy sale of cars assembled in the first six months. Automobile demand is relatively higher than general industrial buying, but the latter is substantial. Slight improvement is recorded in textile equipment buying; also in music wire.

Pittsburgh—Manufacturers' wire continues to dominate activity in wire products. Merchant items, with emphasis on nails, are the weakest.

Birmingham—Demand for most wire products is holding up well. Manufacturers wire continues in relatively tight supply but there has been some easing in certain other wire products, notably nails.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 173

Pittsburgh—Surge of interest in byproduct coke has added vigor to the market in the Pittsburgh district. Inquiries are being received for beehive coke also. Coke is currently moving at a faster rate than two months ago despite continuing sluggish foundry activity.

Youngstown—Construction is expected to be started soon on a 76-oven by-products coke plant for Youngstown Sheet & Tube Co. at its Campbell works. Wilputte Division, Allied Dye & Chemical Corp., has the contract. Drawings are about completed and brick has been ordered for the unit. About 450,000 tons of coke yearly will be added to Campbell works' capacity. Estimated cost is around $10 million.

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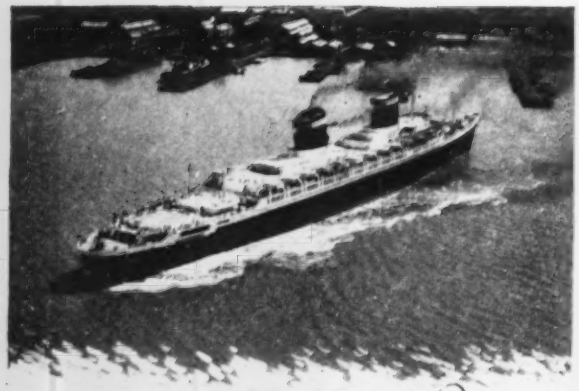

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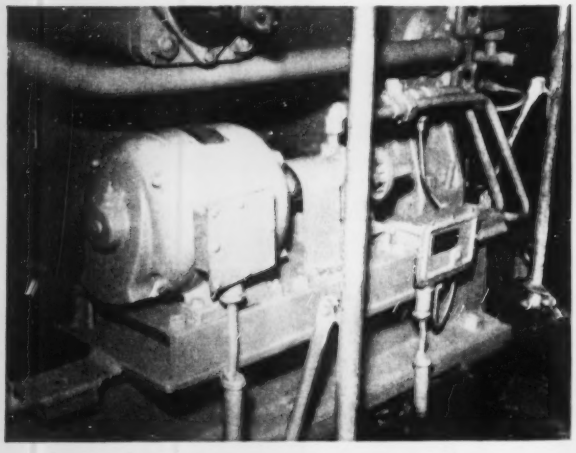

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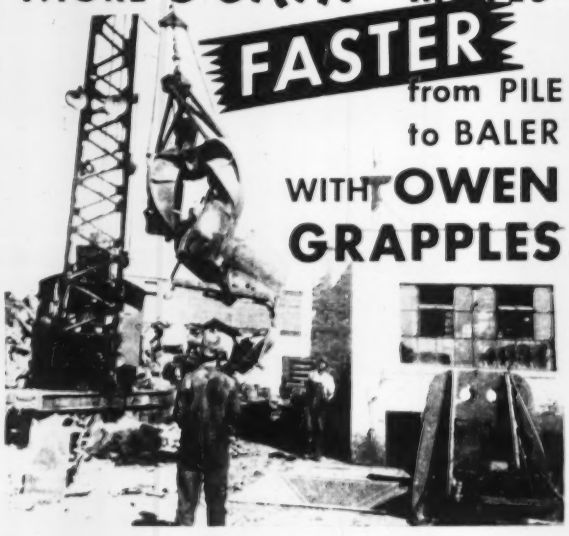

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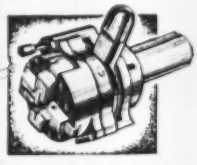

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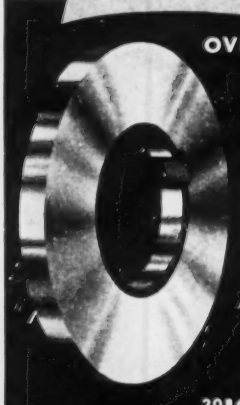

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Pig Iron . . .

Pig Iron Prices, Page 168

New York—Blast furnace production gained in December, totaling 6,509,536 net tons compared with 6,227,288 in November, according to the American Iron & Steel Institute. In December, 1951, total output was 5,977,340 tons.

Of total production in December, 6,436,136 tons were pig iron and 73,400 tons ferromanganese and spiegeleisen. This compares with 6,155,565 tons of pig iron and 71,723 tons of ferromanganese and spiegel in November. In December, 1951, pig iron production amounted to 5,912,567 tons and ferromanganese and spiegel, 64,773 tons.

December production brought the total blast furnace output for 1952 to 62,158,591 tons, of which 61,528,665 tons were pig iron and 629,926 tons ferromanganese and spiegel. These figures compare with total production for 1951 of 71,232,761 tons of which 70,487,380 tons were pig iron and 745,381 tons ferromanganese and spiegel.

	Pig Iron (net tons)	Ferromanganese and Spiegel (net tons)	Total Blast Furnace Output (net tons)
1952			
November	6,155,565	71,723	6,227,288
December	6,436,136	73,400	6,509,536
12 Mos.	61,528,665	629,926	62,158,591
1951			
November	5,843,020	68,353	5,911,373
December	5,912,567	64,773	5,977,340
12 Mos.	70,487,380	745,381	71,232,761

Output of pig iron and ferroalloys last year was the third highest in history. Production in the fourth quarter of the year was over 19.2 million tons, equivalent to an annual rate of about 77 million tons, or nearly 6 million above the record high established in 1951.

During the year the blast furnaces were operated at 84.2 per cent of capacity. The furnace rate in December was 104.4 per cent.

New York—Extension by Washington of the inventory limitation to 60 days, from 30 days, has stimulated pig iron buying to some extent. There is still enough foundry iron to meet requirements of district consumers, however.

Buffalo—Decided improvement in general foundry demand for pig iron is reported. Many small shops that have been working on curtailed schedules are calling for larger tonnages.

Philadelphia—The Chester, Pa., furnace, a Barium Steel property, was blown out recently for relining. A nonmerchant producer with annual capacity of 200,000 tons, this stack will be down about two months, thus adding to the general stringency in basic iron.

Foundry iron is in good supply and there is an easier trend in foreign offerings. Dutch iron is available for first quarter at prices not much in excess of the domestic market. Some feeling out of the market with regard to 50,000 tons of Scandinavian off-grade iron is reported. This is said to be low in manganese and high in sulphur. Some consumers have been sounded out on purchase of this material at scrap levels. However, no firm offerings have been made by the owners. The iron is said to have been produced by a new integrated steel plant which has not yet brought its steel melting units into operation.

Pittsburgh—Relatively light demand prevails for foundry pig iron compared with a year ago. Reason is the continuing slow demand from foundries.

Cleveland—Although demand pressure on the merchant iron sellers is not what it was a year ago, they are disposing of all their production. Solicitation of business is being more aggressively pushed, however, with foundry operations generally continuing on the sluggish side. Recent upping of foundry inventory limitations to 60 days from 30 has not resulted in any noticeable increase in stockpiling by these consumers.

St. Louis—Granite City Steel Co.'s two blast furnaces are at full 1150-ton daily production rate. No. 2 furnace, shifted a month ago to foundry iron to meet a temporary stringency, has been returned to basic. Consumer allotments remain unchanged. Ground stocks at the furnaces are being built up slightly.

Birmingham—Pig iron consumers, for the most part, are faring well with respect to supplies, especially since the slowing down of the foundry industry generally.

Tin Plate . . .

Tin Plate Prices, Page 170

Chicago—Major canmakers in this area are putting pressure on tin plate producers for more tonnage. Appraisal is that demand is stronger here than elsewhere and that consumers are seeking supply entailing lowest delivery charges.

San Francisco—Entire 1953 output of Kaiser Steel Corp.'s new tin plate mill at its Fontana, Calif., plant has been purchased by western container manufacturers.

Tubular Goods . . .

Tubular Goods Prices, Page 174

Chicago—Present outlook is that heavy tubular goods will be among the last steel products to ease supplywise. This is because of close relationship to the plate shortage. Producers of gas line pipe up to 30-inches are booked solidly into first quarter next year. Some tonnage of up to 16-inch is still available for fourth quarter. Second quarter schedules for seamless tubing are filled but there are openings for electric welded.

Boston—Light wall welded tubing prices are softening with more tonnage offered by secondary producers, small mills supplying their own needs and offering surplus in the open market. This is limited to low carbon largely with demand for stainless sustained at firm prices. Merchant steel pipe stocks, buttweld notably, are in better balance with distributors.

Cleveland—Pipe jobbers are continuing to take in all the tonnage possible in anticipation of active building requirements through the year. Buttweld supplies are reported improved but seamless is tight and prospects are not promising for any material easing in the situation be-

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fore third quarter, if then. Indicative of the strong demand for tubular goods is the fact the Petroleum Administration for Defense last week announced it had allocated only 309,372 tons of steel casing and tubing to 1695 oil and gas operators for the second quarter. This is less than a third of the 1,086,724 tons which had been requested by these consumers.

Seattle—Cast iron pipe agencies report little interest in the market. Small lots are moving out of stock.

Scrap . . .

Scrap Prices, Page 176

Cleveland—Steel grades of scrap are moving steadily to the mills on old commitments but new buying is restricted. Still, the market continues to display strength with dealers' yard stocks reported relatively light and industrial material coming out at slower pace than it was in December. While mill reserves are reported shrinking due to heavy consumption with ingot operations booming along at capacity pace, the steelmakers are noticeably more selective in accepting tonnage. While prices on steel grades hold at ceiling levels, turnings are moving sluggishly and display some signs of easiness. The cast grades continue weak, reflecting lack of active buying interest on the part of foundries. Not much change in market conditions is expected over the next several weeks.

New York—There is little zip to scrap demand at present. Consumers are not pressing for tonnage with the winter now well along and stocks fair to good. Cupola cast prices have softened, brokers now offering to pay no more than $40.

Buffalo—The scrap market is sluggish with the mills not buying aggressively, content to work off large reserve stocks. Fresh yard receipts are light and the market continues strong, but dealers are somewhat confused by the lack of buying.

Philadelphia—Buying flurry in charging box cast scrap at Morrisville, Pa., has subsided, with resultant easing in several cast grades. Charging box cast is quoted $45 to $46, delivered, and unstripped motor blocks $38. Incidentally, the Morrisville plant is lighting up a third open hearth this week. Steel scrap prices continue at ceiling, with supply and demand in balance.

Pittsburgh—Aside from two mills located on the fringe of the Pittsburgh district, no buyers of open hearth grades of scrap are active in the market. These mills are selective about what they take. Cupola cast grades are still looking for a market.

St. Louis—Open weather is stimulating shipments but buying by brokers is tapering. Dealer stocks are depleted and yards are oversold. Mills are comfortable and are taking all scrap offered, except for limiting the number of bundles they will accept so long as there is no price differentiation between bundles and No. 2 steel. Various mills supplied through this district are paying springboards varying as much as $3 in an effort to bring in quality scrap from rural areas. Cast scrap demand is slow and prices nominal. Quotations vary widely. Premium grades of foundry scrap are in tight demand due to limited railroad offerings.

Birmingham—Most shipments of scrap in this area are against commitments. New buying of melting steel is increasingly selective. Bulk of the cast scrap moving is No. 1 cupola, still quoted at $44 to $45.

San Francisco—District mills have dropped their buying prices for open-hearth grades of scrap $2 per ton, except for No. 1 heavy melting which remains at $34, the ceiling price. No. 2 heavy melting and No. 2 bundles are now quoted $27, which is $7 under ceiling, and turnings $12, or $13 under ceiling.

Los Angeles—Steelmaking scrap prices are soft. Lower levels established by the mills two months ago have cut collections by 15 to 18 per cent.

Seattle—Large scrap consumers have comfortable inventories and anticipate no winter shortage. With Canadian scrap now available potential supply is considerably enlarged. One buyer imported 1000 tons from Vancouver, B. C. Some Canadian scrap is being shipped to Japan. Sales of heavy melting steel $2 under ceiling are reported. Navy yard recently sold 1000 tons of unprepared scrap at $24, and 800 tons of prepared at $31.88. For No. 2 prepared $31 is quoted. Cast iron ranges from $29 to $31 and is in excess of demand.

Iron Ore . . .

Iron Ore Prices, Page 175

Cleveland—Iron ore shippers are hoping for an early opening of navigation on the Great Lakes in the 1953 shipping season. The open winter experienced so far, however, provides no assurance that the ships will be moving up and down the lakes any earlier this year than in other seasons. A late winter blast, often experienced in the past, can change prospects overnight and the lake shippers are acutely conscious of that fact.

No shortage of ore is threatened at present, despite the loss of tonnage movement last summer due to the steel strike. Stocks on lower lake docks and at the furnaces at the opening of the year were reported at 15,171,753 tons, about 1,400,000 tons more than were on hand at the beginning of 1952. Based on latest reported monthly consumption of 8,219,924 tons, stocks should be sufficient to support full blast furnace operations into May.

Shortages of certain grades are believed certain to be experienced before then, however. Also, it is reported in ore trade circles, that at least one furnace already is concerned about its supplies with its reserve stocks dwindling rapidly. The lake fleet brought down 71,010,798 tons of ore in the 1952 season, a sharp drop from 89,092,012 in 1951. For 1953, shippers reportedly have set their sights for a 100-million-ton movement.

Carson City, Nev.—Nevada mines shipped more than 2 million tons of high grade iron ore to Japan in 1952, according to Mervin Gallagher, state mine inspector. He said Nevada output will be increased substantially in 1953 with operations to be started in the Gabbs region by George Green Mining Co., Willets, Calif.

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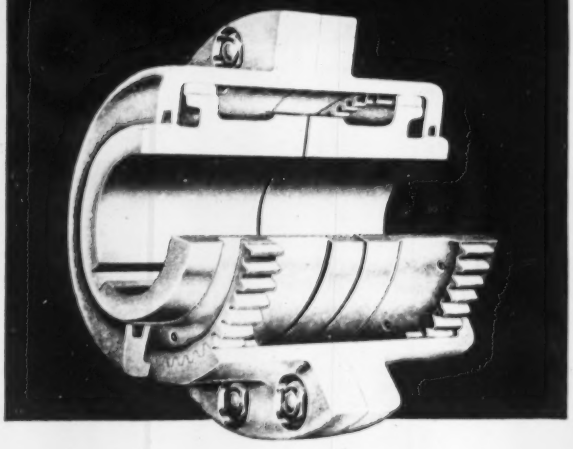

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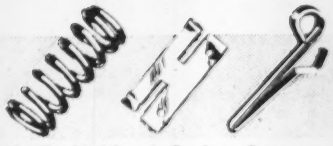

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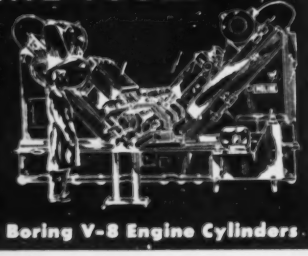

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Warehouse . . .

Warehouse Prices, Page 175

Boston—Warehouses handling general industrial steel products maintain volume at higher level than those distributing specialties. However, with inventories unbalanced and hardly better than 45-50 per cent of normal, sales are restricted.

Sellers' stocks of galvanized sheets and small cold-finished bars are improved, but distributors experience difficulty in building up inventories on larger bars, plates, structurals and sheets. Merchant wire products, including nails are in ample supply, and nail prices are none too firm.

Philadelphia—On a daily basis, January warehouse business was about on a parity with that for December. There was, and continues to be, a brisk demand for plates, shapes, hot and cold-rolled sheets, and large-size hot-rolled carbon bars.

Pittsburgh—Warehouse stocks in the Pittsburgh area are improving, but they aren't balanced. Most apparent weakness is in structurals, bars and plates. Inquiries are good, but are mostly for hand-to-mouth orders.

Cleveland—Distributors in this area are doing a volume of business that stacks up well with that of preceding months. January volume is reported about on a par with that in December by some houses. While warehouse stocks have been improving for some time past they are unbalanced and consumers still have to do considerable shopping to fill all their requirements.

Chicago—Steel warehouses in this area are picking up inventory slowly but only in the products in least demand. These include wire items, small bars, galvanized sheets and cold-rolled strip. Products in strong demand move out immediately upon receipt from the mills. Most distracting to consumers as well as distributors is the unbalance in sizes and grades.

Los Angeles—January warehouse sales are in the same volume as in the like month last year. Deliveries from mills are improving and demand is strong.

San Francisco—Warehouse order volume holds at high level. Stocks on an item to item basis run from nonexistent to satisfactory and comfortably high.

Seattle—Warehouses report strong demand. Inventories continue unbalanced and below normal.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

15,000 tons, power plant, Madison, Ind., for Atomic Energy Commission, to Mississippi Valley Structural Steel Co., St. Louis; Ohio Valley Electric Corp., builder.

17,500 tons, Delaware river extension, Pennsylvania Turnpike Commission, Harrisburg, Pa., to American Bridge and United States Steel Supply Divisions, U. S. Steel Corp., and Bethlehem Steel Co., Bethlehem, Pa.

800 tons, cable fabricating plant, Aluminum Co. of America, Vancouver, Wash., to Pacific Car & Foundry Co., Renton, Wash.

400 tons, Rainer avenue viaduct, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle.

100 tons, auto maintenance shop, Eielson Field, Alaska, to Isaacson Iron Works, Seattle; S. S. Mullen Construction Co., Seattle, general contractor.

Unstated (classified), several thousand tons steel billets, to Seidelhuber Steel Rolling Mills Corp., Seattle.

STRUCTURAL STEEL PENDING

9455 tons, comprising 5197 tons for girders and bracing and 4258 tons for flooring, contract No. 6, section 7, Garden State parkway, bridge over Raritan river, Middlesex county, New Jersey; bids Feb. 19; also 28,350 square feet of sidewalk and mail grating and 8774 lineal feet of bridge railing and 113 tons of cast steel bearings.

8700 tons, superstructures (twin bridges), Cuyahoga river, Ohio Turnpike, Summit county, Ohio; Bethlehem Steel Co., low, $1,637,700.

2828 tons, allocated over period to Apr. 30, 1954, for proposed plant at Tacoma, Wash., of Pacific Oil & Refining Co.

1200 tons, Washington state, Cowlitz river bridge, general contract to Peter Kiewit & Sons, Longview, Wash.; low, $1,026,061.

900 tons, high school, Steelersville, Pa., to William P. Doell, Bangor, Pa., low on general contract.

800 tons, high school, Springfield township, Delaware county, Pa.; bids Feb. 18.

175 tons, new building, Rice-Barton Co., Worcester, Mass., E. J. Cross Co., Worcester, general contractor.

REINFORCING BARS . . .

REINFORCING BARS PLACED

7500 tons, Delaware river extension, Pennsylvania Turnpike Commission, Harrisburg, Pa., to American Bridge and United States Steel Supply Divisions, U. S. Steel Corp., and Bethlehem Steel Co., Bethlehem, Pa.

600 tons, Washington state Rainer avenue viaduct, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle; Dahlgren Construction Co., Seattle, general contractor.

REINFORCING BARS PENDING

1650 tons, bridges, New York avenue, N.E., Washington; bids Feb. 11, director of highways, district government.

600 tons, including 100 tons mesh, bridges, paving and culverts, Tolland-Willington-Ashford and Union, Conn.; bids Feb. 9, Hartford.

500 tons, Washington state, Cowlitz river bridge, general contract to Peter Kiewit & Sons, Longview, Wash.

175 tons, Washington state Lewis county twin girder bridge; bids to Olympia, Feb. 10.

165 tons, state highway bridges, Fall River expressway, Bridgewater and Raynham, Mass.; bids Feb. 3, Boston.

PLATES . . .

PLATES PLACED

4000 tons, reclassified projects, Hanford Works, Wash., reported to Geneva-Columbia Steel Division, U. S. Steel Corp., and Kaiser Steel Corp.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Missouri Pacific, 64 diesel units, placed as follows: seven 1600 hp A type and seven 1600 hp B type freight units and one 1600 hp passenger unit, to American Locomotive, General Electric Companies, Schenectady, N. Y.; seven 1200 hp switching units to Baldwin-Lima-Hamilton Corp., Eddystone, Pa.; thirty-eight 1200 hp road switching units to Electro-Motive Division, General Motors Corp., La Grange, Ill.

Monongahela, twelve 1200 hp diesel switching units, to Baldwin-Lima-Hamilton Corp., Eddystone, Pa.

Western Pacific, four 1500 hp road switchers to Electro-Motive Division, General Motors Corp., La Grange, Ill.

RAILROAD CARS PLACED

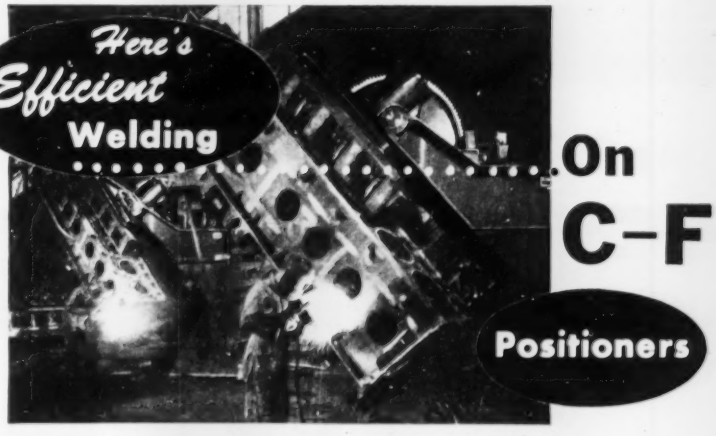
Burlington Refrigerator Express Co., 100 fifty-ton meat refrigerator cars and 30 seventy-ton mechanical refrigerator cars, to own shops.

Erie railroad, 50 caboose cars, to International Railway Car & Equipment Co.

Western Pacific, 102 flat cars to own Sacramento, Calif., shops.

RAILROAD CARS PENDING

Central of Georgia, 1000 fifty-ton box cars; bids asked.



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C-F positioned welds mean better, more economical welds

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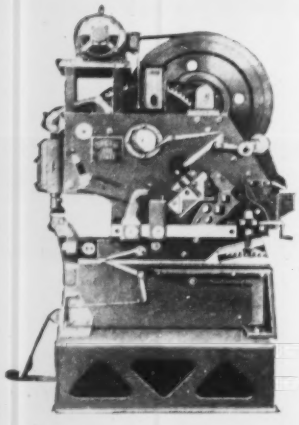
STEELWORKER

The Newest Combination Punch & Shear Designed For Diversified or Production Work

5 Complete Tools in ONE

2 WEEKS' DELIVERY



1. Punch for plate, bars or structurals.
2. Cuts angles and tees with straight or miter cut.
3. Cuts off round and square bars.
4. Shears plates and bars.
5. Coping or notching attachment.

For diversified shop work or high production output, this all-purpose machine is always in complete readiness to do any of above operations.

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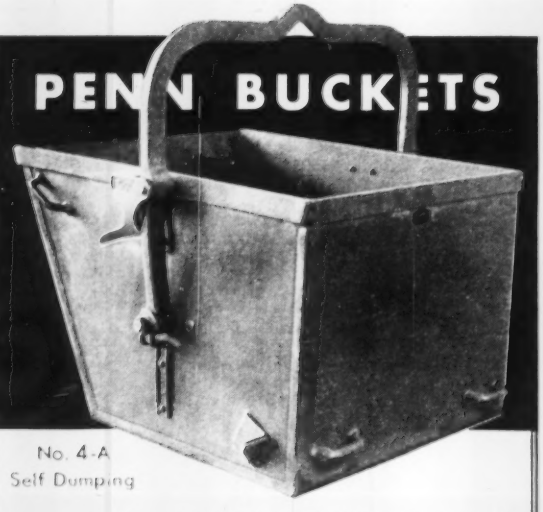

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STEEL can put you in touch with the important ones, those that do more than 92% of the industry's business. Tell the buyers and specifiers in these plants of the machines or materials you have for sale through an "Equipment—Materials" advertisement. For rates write STEEL, Penton Building, Cleveland 13, Ohio.

Here and There in Metalworking . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

Galvanizing Firm Starts Operations

San Joaquin Industries is the first tenant in the new industrial district of Greater Bakersfield, Calif. The company has invested about $110,000 in setting up operations for the weaving and galvanizing of wire fence and production of other products.

Reed-Prentice Completes Factory

Reed-Prentice Corp., Worcester, Mass., completed a factory building which provides 23,000 sq ft of space for the assembly of large vertical milling machines. The firm also manufactures engine and toolroom lathes, die casting machines, plastic injection molding presses and portable power chain saws.

Machinery Firm Moves Branch

Interstate Machinery Co. Inc., Chicago, moved its Philadelphia warehouse and office to A and Venango streets. Frank J. Lunney is manager of the branch.

Blaw-Knox Gets Plant Contract

Blaw-Knox Co., Pittsburgh, was awarded a $40 million contract for construction of a chemical processing plant at the Hanford Works in the state of Washington. David F. Shaw is project manager.

$4 Million Castings Plant Opened

The $4 million plant of Engineered Castings Division, American Brake Shoe Co., Medina, N. Y., has been completed and test production has started.

Kent-Norlantic Ltd. Formed

Kent-Norlantic Ltd. was incorporated and established a plant and offices at Horner avenue., Toronto, Ont. Company replaces the former Canadian branch of George Kent Ltd., London, England. The new company will be engaged in the distribution and later in the assembly and manufacture of domestic and industrial water meters, flow meters, flow measuring tubes for liquids and gases, and instruments and control equipment, similar to those manufactured by the parent company in England. Kent-Norlantic also will undertake the import and eventual manufacture of a new type of steam trap and accessories, special stud wrenches for the automotive and aircraft industries, as well as aircraft fuel meters and clear view screens for marine, locomotive and snowblower use, and a number of other products.

Formsprag Changes Sales Program

Formsprag Co., Detroit, terminated a five-year sales agreement with Morse Chain Co. for the distribution of Formsprag clutches. The company's own staff of sales engineers is now servicing the manufacturers of machinery, power transmission units, motor vehicles and airplanes using its clutches.

Demand for Silicone Products Gains

General-Electric Co., Schenectady, N. Y., placed in operation its expanded facilities for the manufacture of silicone materials at its chemical plant in Waterford, N. Y. The expansion project cost in excess of $5 million. The company forecasts a tenfold increase in total industry demand for all silicone products by 1960.

Aronson Licenses British Firm

Aronson Machine Co., Arcade, N. Y., licensed Donald Ross & Partners Ltd., London, England, to manufacture and sell precision welding positioners under patents held by Aronson.

Air Reduction To Expand Plant

Capacity of Air Reduction Co.'s new calcium carbide plant at Calvert City, Ky., is to be doubled. The original plant, which is nearing completion, has a rated annual capacity of 142,500 tons of calcium carbide, says John A. Hill, president.

Steel Fabricating Plant Planned

General American Transportation Corp., Chicago, plans to construct a $500,000 steel fabricating plant northwest of Provo, Utah, near the Geneva Works of Columbia-Geneva Steel Division, United States Steel Corp. The plant would produce tanks and other containers for petroleum products.

Niagara Abrasive Builds Plant

A $150,000 plant to reprocess grinding wheel stubs has been erected in Lockport, N. Y., by Niagara Abrasive Co. Inc.

Titeflex Appoints Distributor

Pacific Airmotive Corp., Burbank, Calif., was named a distributor for all aviation products manufactured by Titeflex Inc., Newark, N. J. Products include seamed and seamless metal hose, ignition harnesses and ignition shielding.

Edward Valves Inc. Enlarges Plant

Edward Valves Inc. opened its new engineering building which is located next to its research laboratories in East Chicago, Ind.

Stewart-Warner Buys U.S. Machine

Stewart-Warner Corp., Chicago, purchased all assets of U. S. Machine Corp., Lebanon, Ind. Acquisition of U. S. Machine, manufacturer of coal, oil and gas burning equipment, is the first major step in Stewart-Warner's intention to gain

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Conspicuous Cogs

Looking like parts for a giant watch, these glimmering cog wheels will be assembled into Alco-GE diesel-electric locomotives. They were produced at General Electric Co.'s locomotive and car equipment department in Erie, Pa

a major position in the home heating industry.

Atlas Chain Opens Office in South

Atlas Chain & Mfg. Co., Philadelphia, established southern regional offices at 3130 Third Ave., Birmingham. James M. Rooney will be in charge of the office.

Copes Vulcan Names Representatives

Copes-Vulcan Division, Continental Foundry & Machine Co., Erie, Pa., appointed as representatives for its products: Barnes Engineering Co., Indianapolis; Pacific Steam Control Co., Seattle; Cochrane Engineering Corp., Chicago; Gil Moore & Co., Los Angeles and San Francisco; W. E. Veenschoten, Birmingham.

Dahlstrom Moves To Larger Plant

Dahlstrom Machine Works Inc., Chicago, moved to 4227 W. Belmont Ave., that city. The new quarters provide facilities for 100 per cent increase in production of roll forming machines and other high-speed sheet metal fabricating equipment.

Engelberg Buys Machinery Firm

Engelberg Huller Co. Inc., Syracuse, N. Y., purchased Rome Machinery Sales & Engineering Co., Rome, N. Y., manufacturer of buffing and polishing lathes. Engelberg Huller will operate the facilities as Rome Machinery Division and will move the manufacturing operations to its Syracuse plant.

Bell Buys Feldspar Plant

United Feldspar & Minerals Corp., a subsidiary of American Encaustic Tiling Co., Lansdale, Pa., sold its feldspar mine and grinding plant at Oxford, Me., to Bell Minerals Co. of Kentucky.

Erie Meters Expands on Coast

Erie Meters System Co., Erie, Pa., established two company-operated sales offices on the West Coast. Expansion in the West could, eventually, mean the addition of a second shift at the Erie plant.

Electrical Equipment Plant Planned

Crompton Parkinson Co., London, England, acquired a building site near Brantford, Ont., where it will erect a plant for the manufacture of electrical equipment. Cost of the plant is estimated at $150,000.

Razor Firm Dissolves Subsidiary

American Safety Razor Corp., Brooklyn, N. Y., is operating the Kingsbury Ordnance plant directly through its Kingsbury Division. The corporation operated the plant formerly through its wholly-owned subsidiary, American Safety Razor-

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transformers built to your specifications

Take advantage of our more than 40 years' experience in manufacturing and re-building industrial transformers. Complete satisfaction guaranteed.

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- 1—MEDART TURNING CRUSHER Similar to #1700 AMERICAN, complete with Feed Hopper and Motor. REBUILT.
- 1—RUBBER LINED STEEL TANK 5'-0" Wide, 4'-0" High, 32'-0" Long. This tank is absolutely like NEW. Fully equipped with Belke Conveyor, Motors, and controls. Used only 3 months.
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THREADED Rods

10 to 12 ft. lengths ALL METALS

Also Screw Machine Products to Order

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FOR SALE

- Brand new PANGBORN ROTOBLAST MACHINE #4307, 440 Volt, 3 phase. Equipped with 6 auxiliary tables, abrasive separator, elevator, #140 type RF rotoblast unit, Style C and size 10 abrasive reclaimer, size 220 CK dust collector and spare parts.
- NATIONAL #3 HIGH SPEED FORGING MAXIPRESS, 440 Volt, 3 phase. Used for 1 month's production. Equipment includes complete set of upper and lower bolster plates with hydraulic gripping mechanism.
- Located in Mid-South. For complete information, write Box 652, STEEL, Penton Bldg., Cleveland 13, Ohio.

PRACTICALLY NEW
LINDBERG 8 KW ELECTRIC FURNACE
Serial No. 7711, Model 1014-E15
1 Phase, 60 Cycle, 54 Volts, 2500° F
Complete with Motor, Blower, Controls
Brand New 8 KVW LINDBERG Transformer
1 60 440 to 54 Volts
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Serial No. 1C049-233 Practically New
Capacity 1800 Cubic Feet
Complete with Tank, Permutit, Ranarex Controls and Specific Gravity Meter
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USED **AS IS** **RECONDITIONED**

STANDARD GAUGE FREIGHT CARS

Box, Double Sheathed, 50-Ton Capacity
Box, Single Sheathed, 50-Ton
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Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Tank, 3,000-Gallon, High Pressure
Tank, 8,000-Gallon, Coiled and Non-Coiled

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40 & 50-Ton Capacity, Length 70' and 74'

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Eight Wheel, Cupola Type

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Side Dump, 20-Yd., 40-Ton, Lift Door
End Dump, 20-Yd., 50-Ton Drop Door
Side Dump, 30-YD., 50-TON, DROP DOOR

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Overhead Cranes
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WITH SOME ENGINEERING BACKGROUND AND FAMILIAR WITH STRUCTURAL STEEL FABRICATING AND ALLIED INDUSTRIES FOR MID-WEST TERRITORY. SALARY, EXPENSES AND COMMISSION. GIVE FULL INFORMATION—AGE AND QUALIFICATIONS. CORRESPONDENCE CONFIDENTIAL. WRITE BOX 625, STEEL, PENTON BLDG., CLEVELAND 13, OHIO.

STEEL SALESMAN: BAR MILL PRODUCTS. Territory Atlantic seaboard principally southeastern States. Salary and expenses with added incentive compensation. Reply complete resume stating salary expected. Write Box 643, STEEL, Penton Bldg., Cleveland 13, Ohio.

SHOP SUPERINTENDENT

For Structural Steel and Miscellaneous Iron Shop located in the South. Excellent opportunity for a man experienced in supervising steel fabrication for buildings. Submit complete information relative to past experience, age, qualifications, and salary expected in first reply. Address Box 649, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

PLANT MANAGER: M.I.T. GRADUATE WITH 25 years' experience in Plant Management, including Production planning, machine and plant loading, Material and tool control, quality control, purchasing, incentives, standard costs, variable budgets, overhead analysis and break-even charts, job evaluation, supervisory responsibility chart and labor relations. Capable administrator with excellent record. Write Box 632, STEEL, Penton Bldg., Cleveland 13, Ohio.

FACTORY MANAGER. Age 34 with experience as Assistant Factory Manager, Chief Engineer, and Assistant Superintendent in two medium sized manufacturing plants. Graduate Mechanical Engineer. Registered (by exam.) State of Illinois. Write Box 606, STEEL, Penton Bldg., Cleveland 13, Ohio.

WE CAN HELP YOU TO CONTACT high caliber men to fill specific jobs you have in mind. Readers of STEEL include men of wide training and experience in the various branches of the metalworking industry. When you have an opportunity to offer use the Help Wanted columns of STEEL.

Accounts Wanted

MANUFACTURERS AGENT technically trained located in Detroit, with successful sales background in heat treating field desires quality line of heat treating equipment, heat resisting castings or supplies. Write Box 651, STEEL, Penton Bldg., Cleveland 13, Ohio.

MANUFACTURER'S AGENT

If you have anything to sell to metalworking industry in Milwaukee and Eastern Wisconsin, here's your man with almost twenty years in the territory. Steel mill background. Would welcome mill or warehouse account in sheets and/or bars, plates, tubing or parts. Address Box 654, STEEL, Penton Bldg., Cleveland 13, Ohio.

Employment Service

SALARIED POSITIONS $3,500 TO $35,000. WE offer the original personal employment service (established 43 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC., 110 Dun Bldg., Buffalo 2, N. Y.

SALES AGENTS WANTED

To sell wiping cloths, representing reliable packer. Write and explain full details of present lines, organizations and territories covered.

Box 653, STEEL,
Penton Bldg. Cleveland 13, Ohio

WANTED—aggressive, imaginative executive to head small steel casting company in Southern city; must have some electric furnace and metallurgical experience; attractive salary, bonus and stock option may be arranged.

Write Box 655, STEEL,
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MECHANICAL DESIGN ENGINEERS

Positions available for Design Engineers with experience in the design of mechanical equipment used in Blast Furnaces, Open Hearth Furnaces, Sintering Plants, Rolling Mills and other auxiliary plants for the processing and production of iron and steel. These men must have experience in Steel Plant layout as well as the design of equipment involved. These are permanent positions with excellent advancement opportunities for qualified Engineers who are interested in greater accomplishment.

If you qualify and are interested in advancing with a continually expanding organization, write, giving complete resume of positions held and duties performed, education, age, salary desired, etc., to:

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New, rapidly expanding steel mill now in operation ready to fill position of Rolling Mill Superintendent. Electric furnace, thirty ton capacity, producing carbon and alloy grades. 18" and 10" rolling mills (9 stands designed for further expansion). Require top grade full operational experience in rolling and conditioning all grades. Must know equipment, roll design and roll shop. Salary with production incentive open, consistent with experience and ability. This is top position with exceptional future. Age limit 50 years. Answer with full details of experience and references. Include personal photograph.

Frank V. Seidelhuber, President
SEIDELHUBER STEEL ROLLING MILL CORP.
5280 West Marginal Way
Seattle 6, Washington

Swords Into Plowshares—a Recent Version

Adapted from the famous Army "Bazooka," a "jet tapper" with an explosive head is used to tap an open-hearth furnace for the pouring of Inland Steel Co.'s 80 millionth ton of steel at Indiana Harbor, Ind. The tapper, fired electrically, blows a clean hole through the clay plug, eliminating hand ramming

Kingsbury Corp., which is being dissolved.

Bendix Computer Division Formed

Bendix Aviation Corp., Detroit, organized the Bendix Computer Division with headquarters in Hawthorne, Calif. E. Palmer Nicholls, vice president of the Bendix Pacific Division, is also general manager of the Computer Division.

American Machine Buys Firm

Niagara Filter Corp., Buffalo, maker of industrial filters, has been sold to American Machine & Metals Co. Inc., East Moline, Ill. Niagara Filter will be operated as a division of American Machine & Metals. The filter business will be transferred gradually to East Moline, Ill. A new firm will be formed to manufacture other lines in the Buffalo plant.

Micro Division Opens Branch

A new engineering service and sales office has been established in Rochester, N. Y., by Micro Division, Minneapolis-Honeywell Regulator Co., Minneapolis. Dale S. McQuiston Jr. is the regional manager.

GM of Canada Enlarges Warehouse

General Motors of Canada is adding five acres of floor space to its central parts warehouse in Oshawa, Ont. The warehouse was completed in 1951 and is already outgrown. Mr. Wecker, president, forecast higher production schedules during 1953 because of the 17½ acre truck plant now being rushed to completion. The new plant, with a capacity of 50,000 trucks annually, will be in operation by June.

Parker Appliance Names Agent

Parker Appliance Co., Cleveland, appointed Standard Brass & Mfg. Co., Shreveport, La., as a distributor of its industrial tube fittings and tube fabricating tools.

Emsco Derrick Changes Name

Emsco Derrick & Equipment Co., Los Angeles, changed its name to Emsco Mfg. Co.

Tool Engineers Charter New Chapter

American Society of Tool Engineers, Detroit, chartered its 104th chapter in Joliet, Ill.

Welding Sales Corp. Moves

Welding Sales Corp., distributor of General Electric welding equipment, moved into larger quarters in Kenilworth, N. J. The company formerly was located in Newark, N. J.

Philco Corp. Plans Expansion

Philco Corp., Philadelphia, will build a $1 million plant at Connersville, Ind., which will increase its refrigerator production by 50 per cent and its home freezer building capacity by 100 per cent. The new plant is scheduled to go into operation before the end of the year.

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STANDARD EUCLID CRANES,

whether they are put to Special or General Purpose use. Standard Euclid Cranes are available in capacities of 3, 5, 7-1/2, 10, 15, 20 and 25 tons in various spans.

All detail parts are standardized and jig machined to assure interchangeability.

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Shafts short and heavy to withstand stress.

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Anti-friction bearings throughout.

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Most Specified . . .
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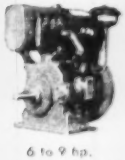
Most H.P. Hours . . .

WISCONSIN
HEAVY-DUTY
Air-Cooled
ENGINES

3 to 6 hp.



6 to 9 hp.

7 to 14½ hp.

15 to 36 hp.

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Specified as integral power units by more than 500 original equipment manufacturers . . .

Delivering dependable, efficient power on a greater variety of service applications than all other makes of engines combined, in a 3 to 36 hp. range . . .

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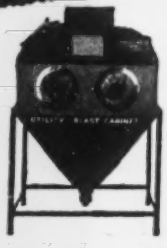
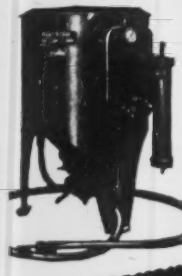
Here's BIG NEWS on Blast Cleaning Dust Control Precision Finishing

BLAST CLEANING!

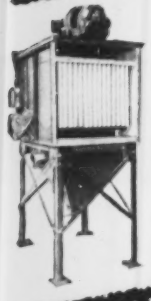


Blast Cleaning Cabinet cleans rust, grime, dirt, paint, etc., from metal parts. Produces a smooth surface on pieces up to 60" x 36". Models from $319.00 and up.



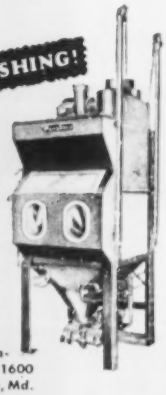
Blast Cleaning Machine removes rust, dirt, scale, etc., is ideal for maintenance work. Cleans large objects such as bridges, tanks, etc., before painting. Six sizes, portable or stationary from $170.00 and up.

DUST COLLECTING!



Unit Dust Collector stops dust at source, minimizes machine wear and tear, reduces housekeeping and maintenance costs. Solves many grinding and polishing nuisances. Models from $286.00 and up.

PRECISION FINISHING!



Hydro-Finish Cabinet uses liquid blast to polish, clean and finish molds, dies, etc. Removes scale, discoloration with minimum hand work. Holds tolerances to .0001". Models from $1410.00 and up.

Write for details on these machines to: Pangborn Corp., 1600 Pangborn Blvd., Hagerstown, Md.

Pangborn

Look to Pangborn for the latest developments in Blast Cleaning and Dust Control Equipment

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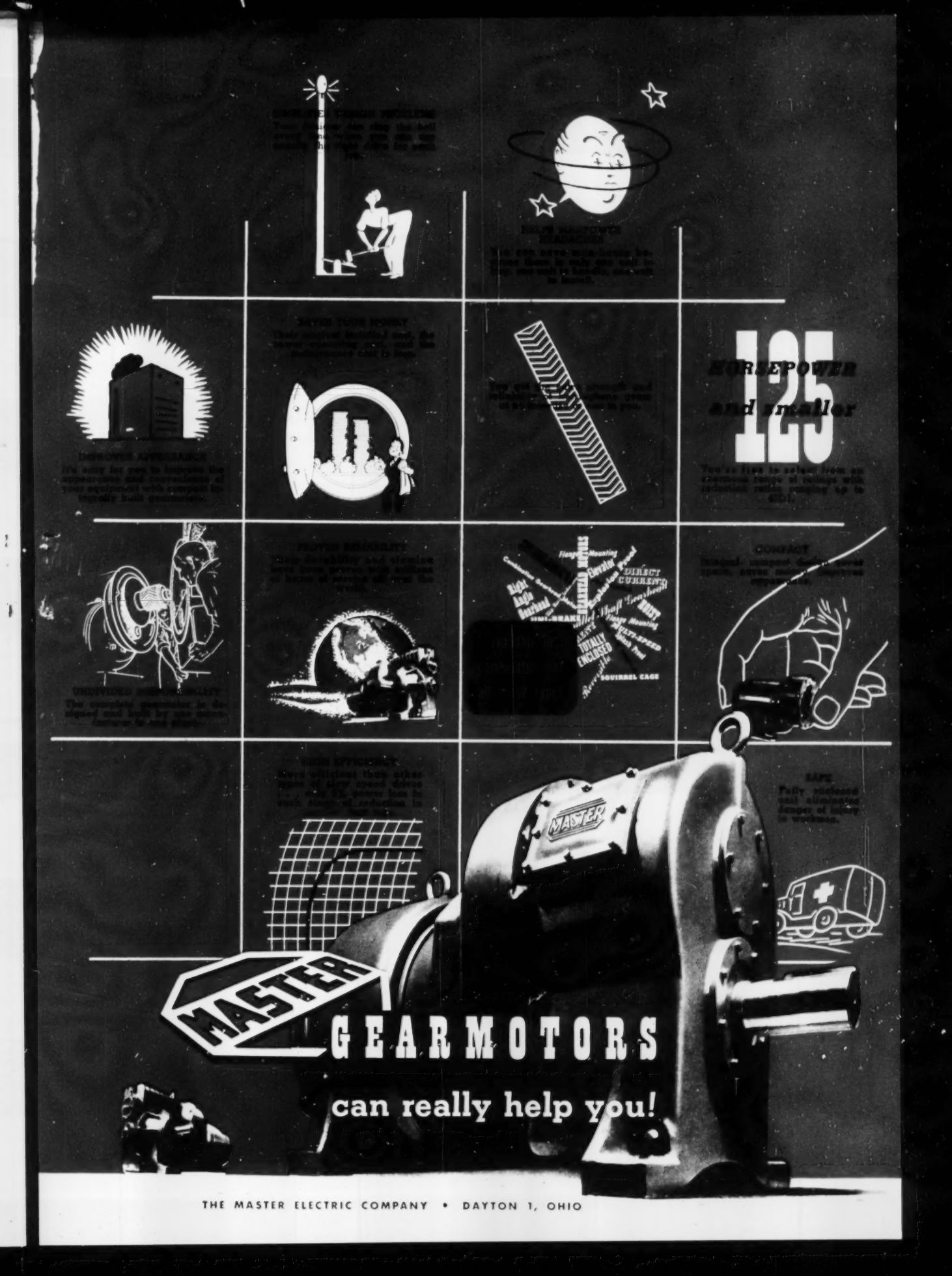
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HORSEPOWER
and smaller
DIRECT CURRENT
SQUIRREL CAGE
MASTER
MASTER
GEARMOTORS
can really help you!
THE MASTER ELECTRIC COMPANY • DAYTON 1, OHIO

New mill flattens wire at 1200 feet a minute

...using 40 TIMKEN® bearings

THIS 2-stand tandem wire flattening mill flattens and winds copper wire at 1200 feet a minute. The mill, manufactured by The Waterbury Farrel Foundry and Machine Company, is complete with power driven edger and winder.

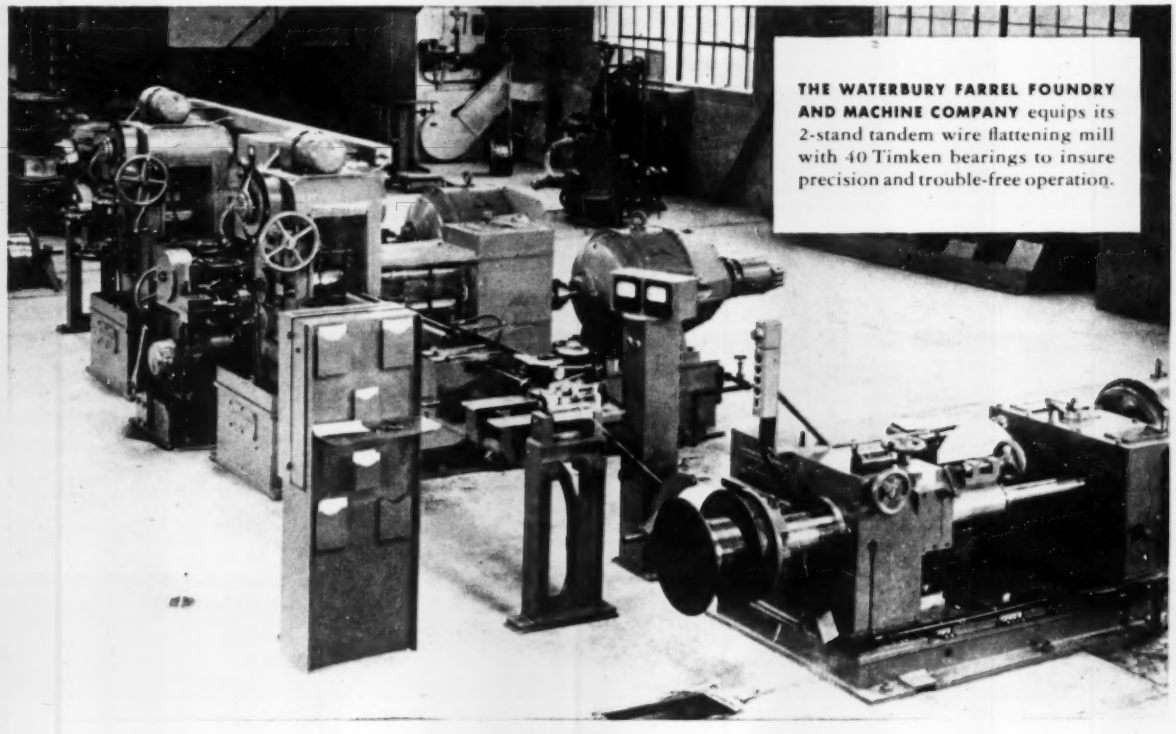
One way Waterbury Farrel insures precision and trouble-free operation in this mill is by mounting vital moving parts on Timken® tapered roller bearings—a total of 40 on the roll necks and drive in the first mill stand, finishing mill stand, edger and winder.

Because of their tapered construction, Timken bearings take both radial and thrust loads in any combination. They hold gears and shafts in the mill in proper alignment, reducing wear. The true rolling motion and smooth surface finish of Timken bearing rollers and races virtually eliminate friction. Wear within the bearings themselves is negligible. And because Timken bearings make closures more effective, dust and dirt can be kept out—lubricant kept in. Mill maintenance is minimized.

No other bearings can give you all the advantages you get with Timken bearings. Make sure you have them in the machines you build or buy. Always look for the trade-mark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN BEARING EQUIPPED

This symbol on a product means its bearings are the best.



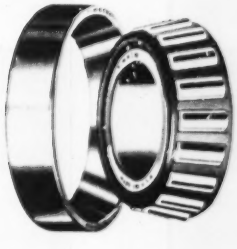
THE WATERBURY FARREL FOUNDRY AND MACHINE COMPANY equips its 2-stand tandem wire flattening mill with 40 Timken bearings to insure precision and trouble-free operation.

DESIGN LEADERSHIP

The first Timken tapered roller bearing was produced in 1898. Since then the one-piece multiple perforated cage, wide area contact between roller ends and ribs, and every other important tapered roller bearing improvement have been introduced by The Timken Roller Bearing Company.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

TAPERED ROLLER BEARINGS



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION